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DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 6 push-on type knobs from the front.
2. Remove 6 wood screws holding the rear cover. Remove the rear cover.
3. Remove 4 wood screws holding control panel.
4. Remove speaker leads.
5. Remove 2 wood screws from the tuner support bracket.
6. Remove 4 chassis bolts from the bottom.
7. Remove the chassis.

CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS
Care should be exercised when connecting test equipment or physically contacting the chassis.

MODEL 21T37M (Ch. TS-542)

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TRADE NAME	Motorola	MODELS	CHASSIS
		Y21K70B, Y21K70M, Y21T37B, Y21T37M	TS-542Y
		21K70B, 21K70M, 21T37B, 21T37M	TS-542
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois		
TYPE SET	Television Receiver		
TUBES	Eighteen		
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING 155 Watts, 1.4 Amp. @ 117 Volts AC	
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF oscillator is possible by removing the channel selector and fine tuning knobs. Set the fine tuning at the center of its range. The adjustments (located in a circle around the shaft) should be made in sequence from the highest to the lowest channel in the area. Channel 12 adjustment is located at 9 o'clock, proceed in a counter clockwise direction adjusting for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 5 wood screws from the trim at the top. Tilt safety glass out and lift to remove.

SPECIAL ADJUSTMENTS

A. Focus
The focus may be varied by the position of a strap on the base of the picture tube. The strap can be connected between pins 6 and 1, or 6 and 10. Readjust the ion trap for the best focus consistent with maximum brightness.

B. Width
The width may be varied by means of a metallic sleeve located between the yoke and the picture tube neck. Adjust sleeve in or out of the yoke for a picture SLIGHTLY larger than necessary to fill the screen.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to set. Set the horizontal hold at the center of its range and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally. (For location, see tube placement chart).

FUSES

One fuse is used for LV power supply protection. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

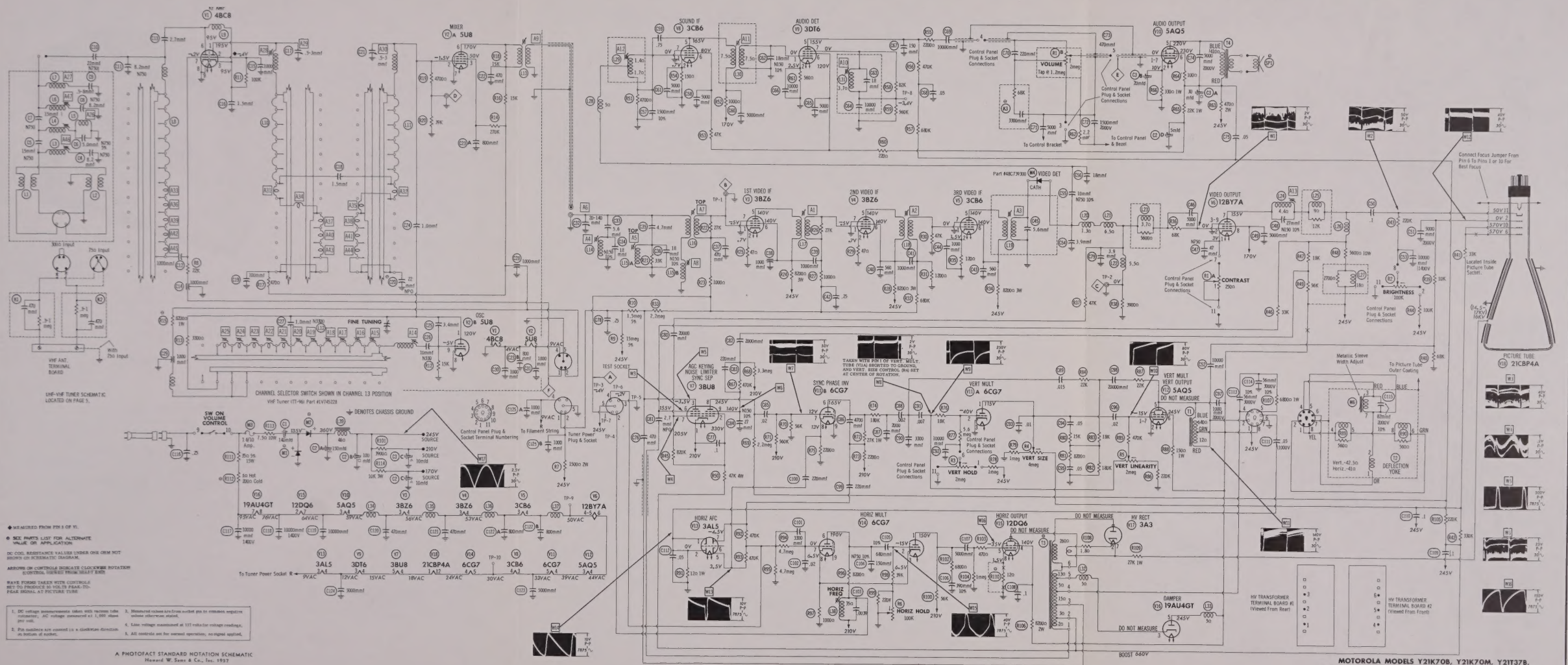
ANTI-PIN CUSHION CORRECTION

Reduce the picture size so that the sides of the raster are visible. Position the 2 magnets so that all sides are straight.

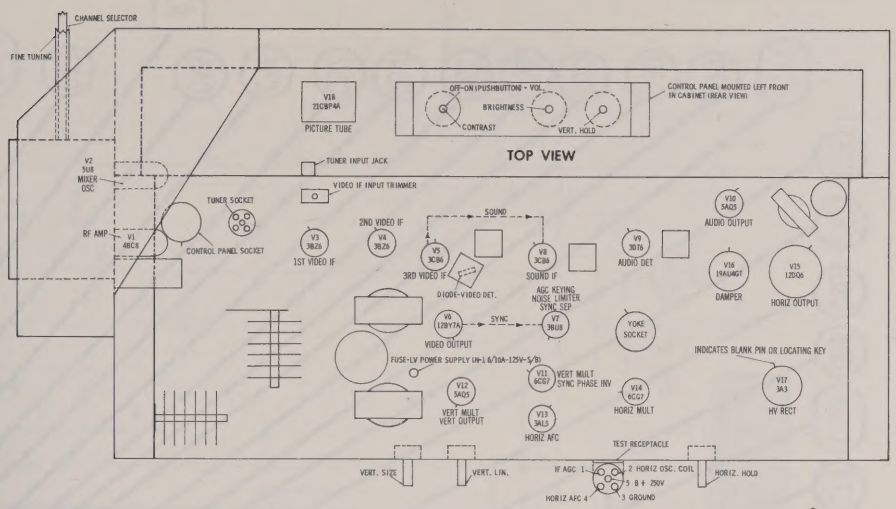
MOTOROLA MODELS Y21K70B, Y21K70M, Y21T37B, Y21T37M, 21K70B, 21K70M, 21T37B, 21T37M (Ch. TS-542, Y)

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1957 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America


MOTOROLA MODELS Y21K70B, Y21K70M, Y21T37B, Y21T37M, 21K70B, 21K70M, 21T37B, 21T37M (Ch. TS-542, Y)
A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1957
UHF-VHF TUNER SCHEMATIC LOCATED ON PAGE 5.
CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION
VHF Tuner (TT-96) Part #1V745228
DENOTES CHASSIS GROUND
SW ON VOLUME CONTROL
FINE TUNING
OSC
MIXER
SOUND IF
AUDIO DET
AUDIO OUTPUT
1ST VIDEO IF
2ND VIDEO IF
3RD VIDEO IF
VIDEO DET
VIDEO OUTPUT
AGC KEYING NOISE LIMITER SYNC SEP
SYNC PHASE INV
VERT MULT
VERT MULT VERT OUTPUT
HORIZ AFC
HORIZ MULT
HORIZ OUTPUT
HV RECT
DAMPER
PICTURE TUBE
CONTRAST
BRIGHTNESS
VOLUME
VERT HOLD
VERT SIZE
VERT LINEARITY
HORIZ FREQ
HORIZ HOLD
DEFLECTION YOKE
Connect Focus Jumper From Pin 6 To Pins 1 or 10 For Best Focus
Control Panel Plug & Socket Connections
To Control Bracket
To Control Panel & Bezel
To Tuner Power Socket
To Filament String
Tuner Power Plug & Socket
VHF ANT. TERMINAL BOARD
300Ω Input
75Ω Input
With 75Ω Input
TEST SOCKET
TAKEN WITH PIN 1 OF VERT. MULT. TUBE (V11A) SHORTED TO GROUND, AND VERT. SIZE CONTROL (R4) SET AT CENTER OF ROTATION.
DO NOT MEASURE
BOOST 660V
HV TRANSFORMER TERMINAL BOARD #1 (Viewed From Rear)
HV TRANSFORMER TERMINAL BOARD #2 (Viewed From Front)
Metallic Sleeve Width Adjust
To Picture Tube Outer Coating
Locate† Inside Picture Tube Secmt.
Part #48C79300
19AU4GT
12DQ6
5AQ5
3BZ6
3CB6
12BY7A
3AL5
3DT6
3BU8
21CBP4A
6CG7
4BC8
5U8
3CB6
3BZ6
3BU8
6CG7
6CG7
5AQ5
◆ MEASRED FROM PIN 3 OF V1.
● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL SHAFT END).
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1. DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured at 1,000 ohms per volt.
2. Pin numbers are counted in a clockwise direction as bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation, no signal applied.

TUBE PLACEMENT CHART



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TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

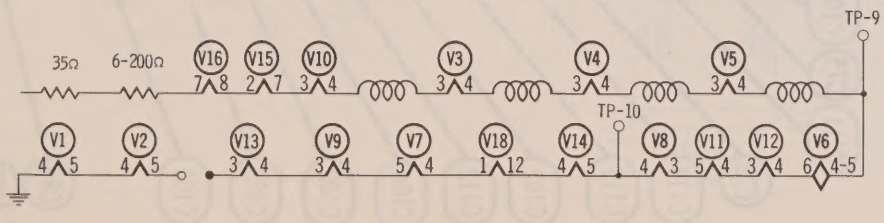
POWER SUPPLY FAILURE
No raster, no sound - **Fuse (M3), Rectifier (M1, M2)**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V3, V4, V5, Diode (M4)**
No pic, no sound, has snow - **V1, V2, V3**
No pic, has sound, has raster - **V6, V18**
Has pic, no sound - **V8, V9, V10**
Overloaded picture - **V7**

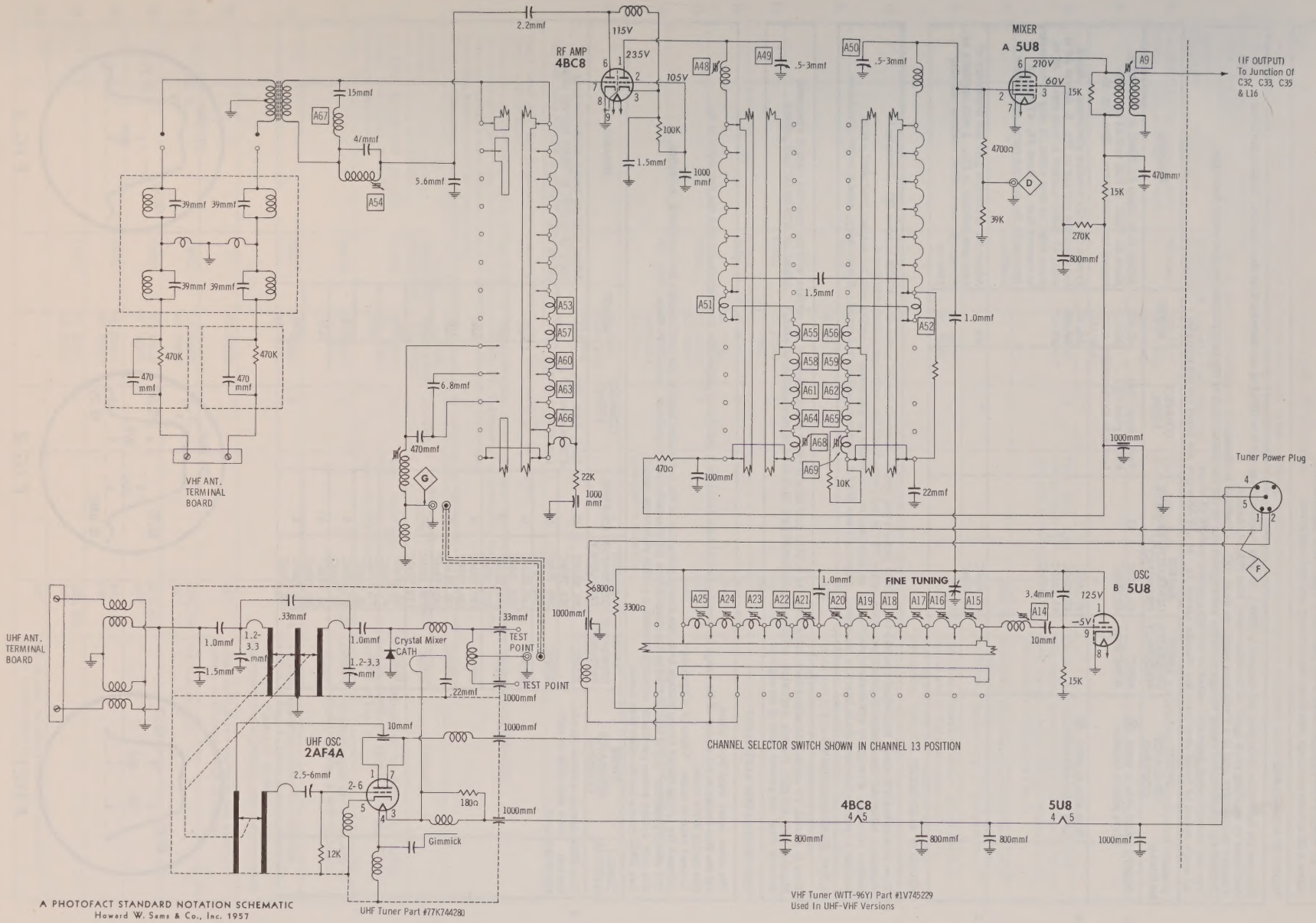
SYNC FAILURE
No vert. sync - **V7, V11**
No horiz. sync - **V7, V11, V13**
No vert. or horiz. sync - **V7, V11**

SWEEP FAILURE
No raster, has sound - **V13, V14, V15, V16, V17, V18**
No vertical deflection - **V11, V12**
Poor vert. linearity or foldover - **V11, V12**
Poor horiz. linearity or foldover - **V14, V15, V16**
Narrow picture - **V14, V15, V16, M1, M2**
Vert. off freq. - **V11, V12**
Horiz. off freq. - **V14**

This receiver employs tubes used in a series filament network, an open filament in any tube in the series will cause the set to be inoperative. (See circuit below).



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



ALTERNATE TUNER SCHEMATIC

MOTOROLA MODELS V21K70B, V21K70M, V21T37B, V21T37M, 21K70B, 21K70M, 21T37B, 21T37M (Ch. TS-542, Y)

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Remove the deflection yoke plug and connect a 2000Ω, 50 watt resistor from TP-5 to TP-7 of the Service Test Receptacle. Disable the local oscillator by shorting pin 9 (grid) of the mixer-osc. tube (V2) to chassis.
Connect the negative lead of a 6 volt bias supply to point Ⓐ . Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use only enough sweep generator output to provide a usable pattern on scope.
All slugs should be tuned away from the chassis except A3, A4 and A5 which are tuned toward chassis.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	.001MFD	High side to point Ⓑ . Low side to chassis.	44MC (10MC Swp)	42.25MC 45.75MC	13	Vert. Amp. thru 47K to point Ⓒ . Low side to chassis.	A1, A2, A3	Adjust A1 to place 42.25MC at 70%, A2 to place 45.75MC at 80% and A3 for flat-topped response curve. (See Fig. 1).
2.	"	High side to point Ⓓ . Low side to chassis.	"	40.0MC 42.25MC 45.75MC 47.25MC	"	"	A4, A5, A6, A7, A8	Preset A9 fully counter clockwise. Adjust for response similar to Fig. 2. Adjust A4 to place 47.25MC marker in trap notch, A5 to place 40MC in trap notch. (It may be necessary to remove bias.) Adjust A6, A7 and A8 alternately for correct curve and marker positions.
3.	"	"	"	42.25MC 45.75MC	"	"	A9	Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown. Remove 2000Ω resistor and plug yoke in.

SOUND IF ALIGNMENT

Tune in a strong TV signal and adjust controls for normal picture and sound. Connect the DC probe of a VTVM to point Ⓔ . Common to chassis. Adjust A10 for maximum deflection. Remove the VTVM and retouch A10 for maximum undistorted sound.
Reduce the signal strength by either disconnecting the antenna lead or connecting an attenuator in series with the antenna lead until a hiss similar to super-regeneration is heard in the sound. Adjust A11 and A12 for maximum undistorted sound. If necessary, repeat entire procedure.

4.5MC TRAP ALIGNMENT

Tune in a local TV signal and adjust fine tuning until the 4.5MC beat interference is prominent in the picture with the contrast control advanced. Starting with A13 fully counter clockwise, rotate slug clockwise past first point of strongest beat pattern. Adjust for MINIMUM beat pattern between first and second point of strong beat.

VHF OSCILLATOR ALIGNMENT

The tuner cover must be in place.
Set the fine tuning to the center of its range by turning so that both channels 2 and 13 are accessible simultaneously thru the two holes in the fine tuning drive wheel.
Connect bias as under "Video IF Alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K to point Ⓒ . Low side to chassis.	A14	Adjust to place sound marker in trap notch as in Fig. 4. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A15	
			201MC	199.25MC 203.75MC	11		A16	
			195MC	193.25MC 197.75MC	10		A17	
			189MC	187.25MC 191.75MC	9		A18	
			183MC	181.25MC 185.75MC	8		A19	
			177MC	175.25MC 179.75MC	7		A20	
			85MC	83.25MC 87.75MC	6		A21	
			79MC	77.25MC 81.75MC	5		A22	
			69MC	67.25MC 71.75MC	4		A23	
			63MC	61.25MC 65.75MC	3		A24	
			57MC	55.25MC 59.75MC	2		A25	

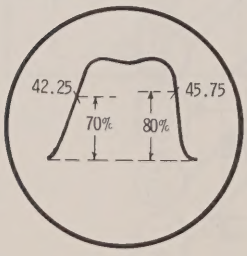


FIG.1

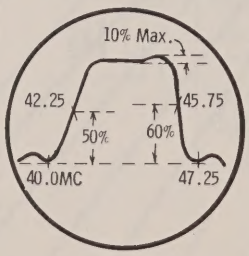


FIG.2

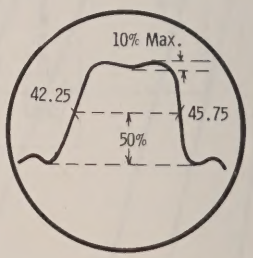


FIG.3

ALIGNMENT INSTRUCTIONS (cont)

VHF RF AND MIXER ALIGNMENT FOR TUNER #TT-96

Short tuner AGC to ground by connecting a clip lead from point Ⓕ to chassis.
Remove the tuner cover.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	Not used	159.0MC (400∿ 30% AM Mod)	7	Vert. Amp. thru 47K to point Ⓒ. Low side to chassis.	A26	Adjust for MINIMUM 400∿ indication on scope.
6.	"	"	"	112MC (400∿ 30% AM Mod)	6	"	A27	"
7.	"	"	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K to point Ⓓ. Low side to chassis.	A28	Detune A46 and A47 by turning slugs well into coils. Preset A29 and A30 at center of their range. Adjust A28 for maximum gain and response similar to Fig. 5.
8.	"	"	"	"	"	"	A29, A30	Adjust for maximum gain and symmetry of response similar to Fig. 5 with markers as shown. Repeat step 7, if necessary.
9.	"	"	85MC	83.25MC 87.75MC	6	"	A31, A32, A33	Adjust in numerical order. First 2 adjustments are to place markers correctly. Last adjustment for maximum gain and symmetry. (See Fig. 6).
10.	"	"	"	"	"	"	A27	Adjust SLIGHTLY above point where it begins to effect channel 6 response curve sound marker.
11.	"	"	79MC	77.25MC 81.75MC	5	"	A34, A35, A36	Adjust in numerical order. First 2 adjustments are to place markers correctly. Last adjustment for maximum gain and symmetry. (See Fig. 6).
12.	"	"	69MC	67.25MC 71.75MC	4	"	A37, A38, A39	"
13.	"	"	63MC	61.25MC 65.75MC	3	"	A40, A41, A42	"
14.	"	"	57MC	55.25MC 59.75MC	2	"	A43, A44, A45	"
15.	"	"	Not used	42.5MC (400∿ 30% AM Mod.)	"	Vert. Amp. thru 47K to point Ⓒ. Low side to chassis.	A46	Adjust for MINIMUM 400∿ indication on scope.
16.	"	"	"	45.5MC (400∿ 30% AM Mod)	"	"	A47	"

VHF RF AND MIXER ALIGNMENT FOR TUNER #WTT-96Y

Short tuner AGC line to ground by connecting a clip lead from point Ⓕ to chassis.
Remove tuner cover.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
17.	Two 120Ω Carbon Resistors	Across VHF antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K to point Ⓓ. Low side to chassis.	A48	Preset A49 and A50 to mid-range. Adjust A48 for maximum gain of response curve similar to Fig. 5.
18.	"	"	183MC	181.25MC 185.75MC	7	"	A49, A50	Adjust for maximum gain and symmetry of response similar to Fig. 5 with markers as shown.
19.	"	"	85MC	83.25MC 87.75MC	6	"	A51, A52, A53	Adjust in numerical order for response similar to Fig. 6. First 2 adjustments are for proper placing of markers. The third adjustment for maximum gain and symmetry.
20.	"	"	"	87.75MC	"	"	A54	Adjust until it just starts to pull down the marker on the sound side of curve.
21.	"	"	79MC	77.25MC 81.75MC	5	"	A55, A56, A57	Same as Step 19.
22.	"	"	69MC	67.25MC 71.75MC	4	"	A58, A59, A60	"
23.	"	"	63MC	61.25MC 65.75MC	3	"	A61, A62, A63	"
24.	"	"	57MC	55.25MC 59.75MC	2	"	A64, A65, A66	"
25.	"	"	"	"	"	"	A67	Adjust until its affect is below channel 2 (or at interference frequency).

ALIGNMENT INSTRUCTIONS (cont)

UHF IF ALIGNMENT

Unplug the UHF cable from the VHF tuner.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
26.	Fig. 7	High side to point Ⓖ. Low side to chassis.	44.0MC (10MC Swp)	41.25MC 45.75MC	UHF	Vert. Amp. thru 47K to point Ⓓ. Low side to chassis.	A68, A69	Adjust for maximum gain and symmetry of response similar to Fig. 8 with markers as shown.

UHF TUNER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

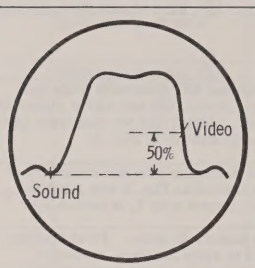


FIG.4

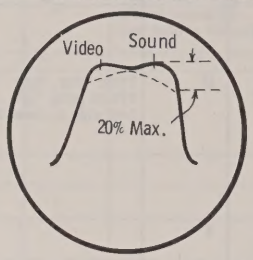


FIG.5

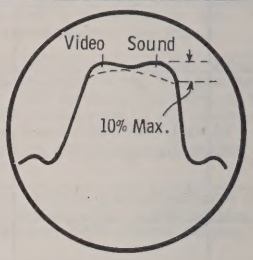


FIG.6

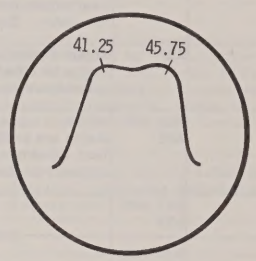


FIG.8

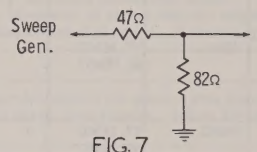
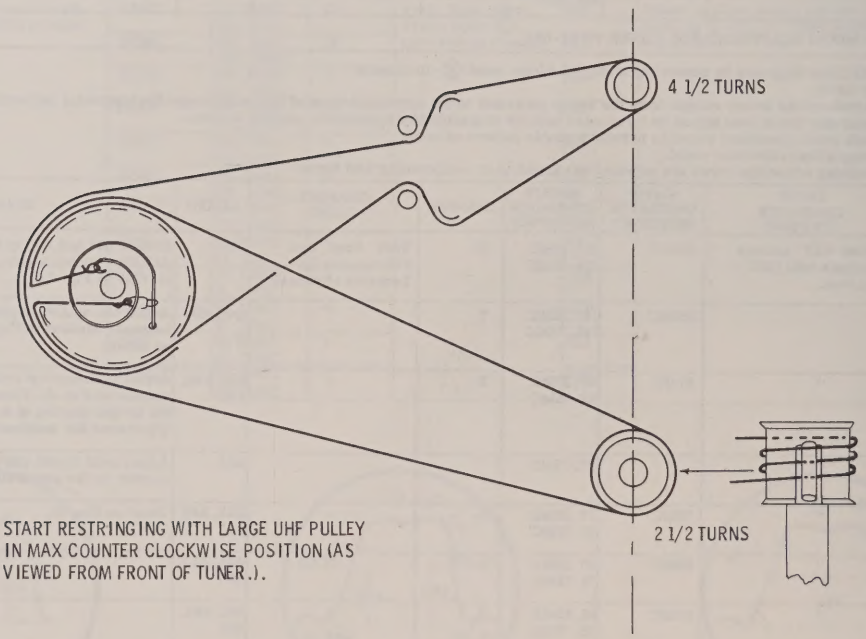


FIG.7



START RESTRINGING WITH LARGE UHF PULLEY IN MAX COUNTER CLOCKWISE POSITION (AS VIEWED FROM FRONT OF TUNER.).

UHF DRIVE CORD STRINGING

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	4BC8	†2000Ω	INF	INF	0Ω	1Ω	INF	3.5Meg	0Ω	0Ω
V2	5U8	†13K	44K	†270K	1Ω	2.5Ω	†17K	0Ω	0Ω	15K
V3	3BZ6	600K	47Ω	15Ω	14Ω	†8200Ω	†8200Ω	0Ω		
V4	3BZ6	600K	47Ω	14Ω	13Ω	†8200Ω	†8200Ω	0Ω		
V5	3CB6	1000Ω	120Ω	13Ω	12.5Ω	†8200Ω	†8200Ω	0Ω		
V6	12BY7A	• 60Ω	72K	0Ω	12.5Ω	12.5Ω	11.5Ω	†5600Ω	†10K	0Ω
V7	3BU8	†3900Ω	ǂ47K	2.4Meg	5Ω	4Ω	†39K	ǂ860K	ǂ2.2Meg	†3.8Meg
V8	3CB6	4700Ω	150Ω	9Ω	8Ω	†11K	†70K	0Ω		
V9	3DT6	7.5Ω	560Ω	3Ω	4Ω	ǂ1.4Meg	†23K	560K		
V10	5AQ5	0Ω	330Ω	16Ω	15Ω	†880Ω	†570Ω	0Ω		
V11	6CG7	• ǂ2.4Meg	1.5Meg	0Ω	10.5Ω	9Ω	†32K	45K	2200Ω	0Ω
V12	5AQ5	• 1.1Meg	0Ω	10.5Ω	11.5Ω	†640Ω	†150Ω	• 1.1Meg		
V13	3AL5	12Ω	12Ω	2.5Ω	3Ω	5.2Meg	NC	5.2Meg		
V14	6CG7	†60K	•100K	1000Ω	6.5Ω	8Ω	†8600Ω	9.4Meg	1000Ω	NC
V15	12DQ6	TP	19Ω	NC	†8200Ω	1Meg	TP	16Ω	12Ω	TOP CAP ǂ18Ω
V16	19AU4	NC	TP	¶	NC	†5Ω	TP	23Ω	19Ω	
V17	3A3	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ǂ278Ω
V18	21CBP4A	5Ω	78K	PIN 6 ǂ360K	PIN 10 ǂ 360K	PIN 11 • 240K	PIN 12 6.5Ω			

¶ THIS READING CAN VARY GREATLY, (10K MINIMUM), DUE TO THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.

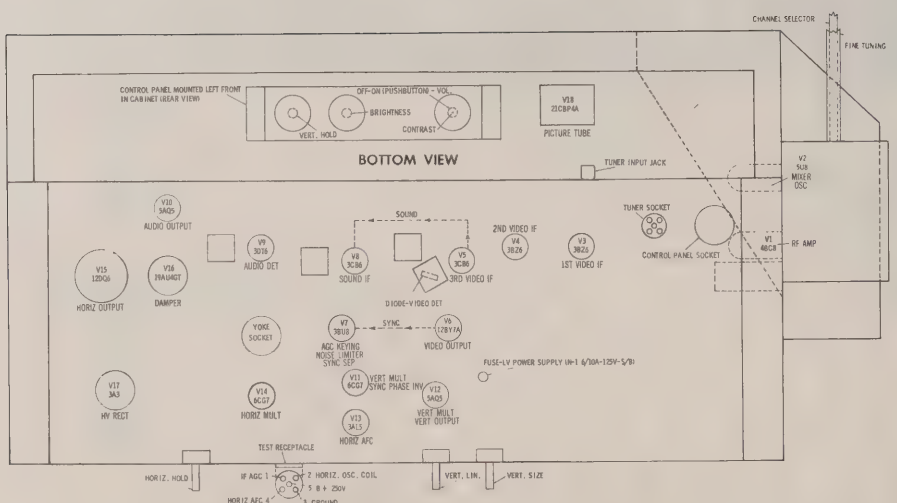
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.

† MEASURED FROM 245V SOURCE.

ǂ MEASURED FROM PIN 3 OF V16.

NC NO CONNECTION

TP TIE POINT



TUBE PLACEMENT CHART

L. F. [illegible]NSHIP
3924 MEADE ST.
DENVER, COLORADO

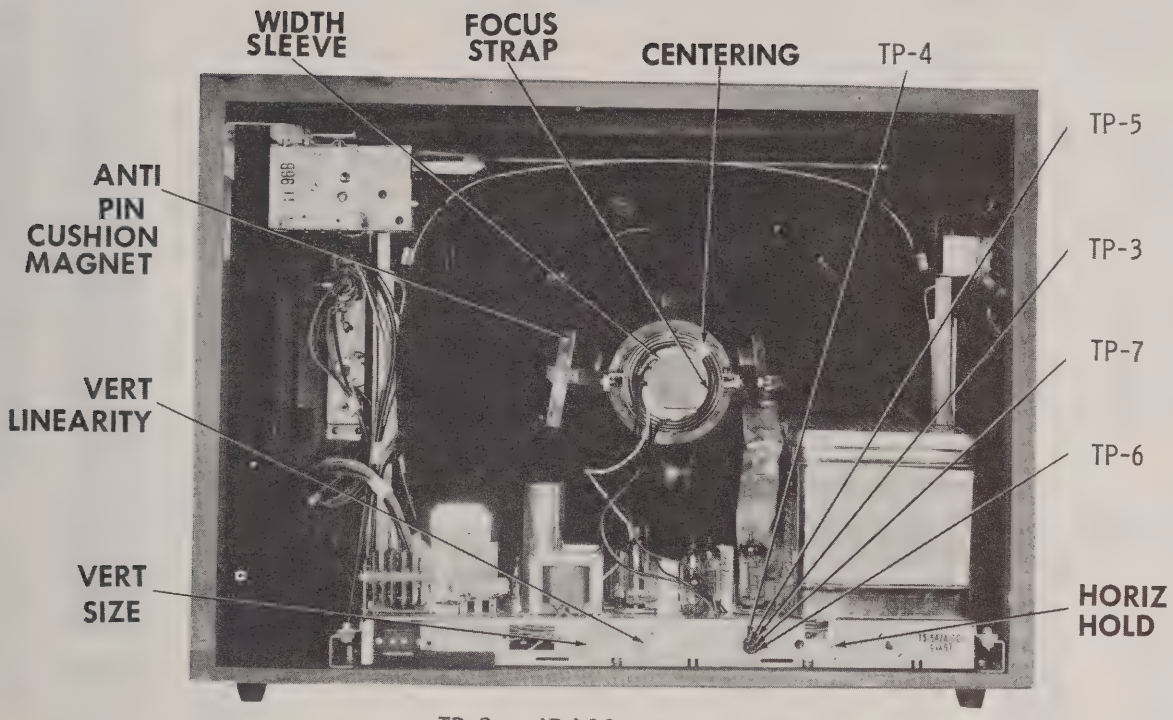
CHASSIS TOP VIEW

MOTOROLA MODELS Y21K70B, Y21K70M, Y21T37B, Y21T37M,
21K70B, 21K70M, 21T37B, 21T37M (Ch. TS-342, Y)

FOLDER 1

CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



TP-3	IF AGC	-.4V
TP-4	HORIZ OSC	225V
TP-5	GROUND	0V
TP-6	HORIZ AFC	-.2V
TP-7	B+	245V

CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Tune in a TV station and adjust controls for normal picture.

Connect a jumper from TP-6 to TP-5 of the service test receptacle.

Connect a .1MFD 400 volt capacitor from TP-4 to TP-6 of the service test receptacle.

Adjust the horizontal hold control to the point where the picture almost remains stationary.

Remove the capacitor from the service test receptacle and adjust the horizontal frequency slug (B1) to the center of the range in which the picture is almost synchronized horizontally.

Remove the jumper wire from the service test receptacle and adjust the horizontal hold control so that no fold-over appears on either side of the screen.

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	RF Amplifier	4BC8	
V2	Mixer-Oscillator	5U8	
V3	1st Video IF Amp.	3BZ6	
V4	2nd. Video IF Amp.	3BZ6	
V5	3rd Video IF Amp.	3CB6	
V6	Video Output	12BY7A	
V7	AGC Keying-Noise Limiter-Sync Separator	3BU8	
V8	Sound IF Amp.	3CB6	

ITEM No	USE	TYPE	NOTES
V9	Audio Detector	3DT6	
V10	Audio Output	5AQ5	
V11	Sync Phase Inv. - Vert. Mult.	8CG7	
V12	Vert. Mult.-Vert. Output	5AQ5	
V13	Horiz. AFC	3AL5	
V14	Horiz. Mult.	6CG7	
V15	Horiz. Output	12DQ6	
V16	Damper	18AUGT	
V17	HV Rectifier	3A3	

PICTURE TUBE

ITEM No	REPLACEMENT DATA: MOTOROLA Part No.	REPLACEMENT DATA: GENERAL ELECTRIC Part No.	REPLACEMENT DATA: SYLVANIA Part No.	NOTES
V18	21CBP44		21CBP44A ①	① Silver screen "B5"

ELECTROLYTIC CAPACITORS

ITEM No	RATING: CAP	RATING: VOLT	REPLACEMENT DATA: MOTOROLA Part No.	AEROVOX Part No.	CORNELL-DUBILIER Part No.	MALLORY Part No.	PYRAMID Part No.	SANGAMO Part No.	SPRAGUE Part No.
C1	40	150	23BT37830	PRS150V150	BR150I5	TC496	TD-150-150	MT-15150	TVA-1432
C2A	150	300	23BT38749	AFH4-02-75	D0025	FP415.55			R3686 *
B	200	300							
C	10	300							
D	5	300							
C3 A	250	300	23BT38750	AFH3-108	CG810	FP330.7	TMT-93	T-475	TVL-3635.5
B	20	25							
C	40	300							

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP	RATING: VOLT	REPLACEMENT DATA: MOTOROLA Part No.	AEROVOX Part No.	CENTRALAB Part No.	CORNELL-DUBILIER Part No.	ERIE Part No.	MALLORY Part No.	SPRAGUE Part No.	NOTES
C4	8.2		21RI25856			C10V82U				N750
C5	15		21RI25929	N750-S15	TCM-15	C10Q15U	TCT-15		5TCU-Q15	N750
C6	5.0		21RI25928	N750-S1 5	TCN-5	C10V5U	TCT-5	NT-555	5TCU-V5	N750 5%
C7	15		21RI25929	N750-S15	TCN-15	C10Q15U	TCT-15		5TCU-Q15	N750
C8	8.2		21RI25856			C10V82U				N750
C9	3-9		20A743920							
C10	22		21RI26554	N750-S1 22	TCN-22	C10Q22U	TCT-22		5TCU-Q22	N750
C11	8.2		21RI25856			C10V82U				N750
C12	1.5		21RI5186	BPD-001	DD-103	BYA5DI	ED-1000	DC52I	58K-DI	
C13	2.7		21RI5950							
C14	1000		21A739920	EF-001	MFT-1000				503C-DI	
C15	1000		21RI5186	BPD-001	DD-103	BYA5DI	ED-1000	DC52I	58K-DI	
C16	1.5		21RI5959	NPO-SI 1.5	TCZ-1R5	C10V15C	TCO-1.5	ZT-5515	5TCCB-V15	
C17	5-3		21KT35965		525-3		3115-D	CT565A		
C18	1.5		21RI5959	NPO-SI 1.5	TCZ-1R5	C10V15C	TCO-1.5	ZT-5515	5TCCB-V15	
C19	100		21RI20577	SI 100	D6-101	L76TI	GP-100	UC-531	5GA-T1	
C20	33		21RI24554	NPO-SI 33	TCZ-33	C10Q33U	TCO-33		5TCC-Q33	NPO ①
C21	5-3		21KT35965		525-3		3115-D	CT565A		
C22	470		21RI24554	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C23A	80		21A739926	BPD-0006	DD-801	L10T8	ED-0008			
B	800		BPD-0008	BPD-001	DD-801	L10T8	ED-0008			
C24	1.0		21RI14071	NPO-SI 1.0	TCC-1				5TCCB-V1	
C25	3.4		21RI24489							
C26	10		21RI24710							N330
C27	1.0		21RI24552							N330
C28	1000		21A739920	EF-001	MFT-1000				503C-DI	
C29	1000		21A739920	EF-001	MFT-1000				503C-DI	
C30	1000		21RI5186	BPD-001	DD-103	BYA5DI	ED-1000	DC52I	58K-DI	
C31	1000		21RI5186	BPD-001	DD-103	BYA5DI	ED-1000	DC52I	58K-DI	
C32	20-140		20A736287							
C33	5.6		21RI26156							
C34	18		21RI20578							N150 10%
C35	4.7		21RI15956	NPO-SI 4.7	TCZ-4R7	C10V47C	TCO-4.7	ZT-5547	5TCCB-V47	
C36	18		21RI20578							N150 10%
C37	470		21RI24554	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C38	1000		21A739426	EF-001	MFT-1000				503C-DI	
C39	1000		21RI5186	BPD-001	DD-103	BYA5DI	ED-1000	DC52I	58K-DI	
C40	560		21RI20926	BPD-00056	DD-561	BYA10T56	ED-560	UC-5356	5GA-T56	
C41	1000		21RI5186	BPD-001	DD-103	BYA5DI	ED-1000	DC52I	58K-DI	
C42	25	100	21KT35965		525-3		CUB2P25		GEM-5025	27M-P25
C43	560		21RI20926	BPD-00056	DD-561	BYA10T56	ED-560	UC-5356	5GA-T56	
C44	1000		21RI5186	BPD-001	DD-103	BYA5DI	ED-1000	DC52I	58K-DI	
C45	5.6		21RI26156							
C46	5000		21A739926	BPD-006	DD-502	BYA10D6	ED-005	DC525	58K-D5	
C47	47		21RI4207	N750-S1 47	TCN-47	C10Q47U	TCT-47	NT-5447	5TCU-Q47	N750
C48	27		21RI19896							N150 10%
C49	5000		21A739926	BPD-005	DD-502	BYA10D6	ED-005	DC525	58K-D5	
C50	.1	400	21RI2906	P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C51	5000	2000	21RI20093		DD30-501	HVC20D6			BL-D60	
C52	10000		21RI4273	BPD-01	DD-103	BYA5DI	ED-01	DC5II	58K-DI	
C53	10000	1400	21RI24822	DAC-27		HVH26II			BL-S10	
C54	3.9		21RI15943							
C55	10		21RI2114	N750-SI 10	TCT-10	C10Q1U	TCT-10	NT-541	5TCU-Q1	N750
C56	18		21RI20578							10%
C57	1500		21RI23494				ED-1500			
C58	5000		21A739296	BPD-006	DD-502	BYA10D6	ED-005	DC525	58K-D5	
C59	.75		21KT35623							
C60	5000		21A739296	BPD-005	DD-502	BYA10D6	ED-005	DC525	58K-D5	
C61	5000		21A739296	BPD-005	DD-502	BYA10D6	ED-005	DC525	58K-D5	
C62	18		21RI20578							N150 10%
C63	18		21RI20578							
C64	10000		21KT37900	BPD-01	DD-103	BYA5DI	ED-01	DC5II	58K-DI	
C65	5000		21RI15311	BPD-005	DD-502	BYA10D6	ED-005	DC525	58K-D5	
C66	10000		21R482726	BPD-01	DD-103	BYA5DI	ED-01	DC5II	58K-DI	
C67	150		21RI4013	BPD-00015	DD-151	L10T15	ED-150	UC-5315	5GA-T15	
C68	.05	600	21RI2288	P488N-05	DF-503	CUB505		GEM-615	6TM-S5	
C69	10000		21R482726	BPD-01	DD-103	BYA5DI	ED-01	DC5II	58K-DI	
C70	220		21RI4015	BPD-00022	DD-221	L10T22	ED-220	UC-5322	5GA-T22	
C71	5000		21RI5313	BPD-005	DD-502	BYA10D6	ED-005	DC525	58K-D5	
C72	1500	2000	21RI24121		DD30-152	HVC20D15		DC3025		
C73	470		21RI24554	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	
C74	5000	2000	21RI20093		DD30-502	HVC-20D6			BL-D60	
C75	.05	600	21RI2285	P688N-05	DF-503	CUB505	GEM-615		6TM-S5	
C76	470		21RI2478	BPD-00047	DD-471	BYA10T47	ED-470	UC-5347	5GA-T47	

CAPACITORS (cont)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MOTOROLA Part No.	AEROVOX Part No.	CENTRALAB Part No.	CORNELL-DUBILIER Part No.	ERIE Part No.	MALLORY Part No.	SPRAGUE Part No.	NOTES
C77	.1	400	5RI21006	P488N-1		DF-104	CUB4P1		GEM-401	4TM-P1
C78	.25	100	5RI23045	P288N-25			CUB2P25		GEM-3025	27M-P25
C79	3.9		21RI15963							
C80	20000		21RI4182	BPD-02		DD-203	BYB5E2	ED-02		58K-S3
C81	2.7		21RI25699							NPO
C82	2000		21RI21106	BPD-002		DD-202	BYA10D2	ED-002		DC522	58K-D2	
C83	220		21RI4015	BPD-00022		DD-221	L10T22	ED-220		UC-5322	5GA-T22	
C84	27		21RI19896							N150 10%
C85	.03	600	21RI23079	P688N-03		DD-303	CUB6D3			GEM-623	6TM-S3	
C86	4700		21RI13049	BPD-0047		DD-472	BYA10D4	ED-0047		DC5347	58K-D47	
C87	2000		21RI21106	BPD-002		DD-202	BYA10D2	ED-002		DC522	58K-D2	
C88	.003	600	21RI2569	P688N-002		DD-302	CUB6D2	GP-3000		GEM-622	6TM-D2	
C89	.015	400	21KT37431	P488N-015		DDS8-153	CUB6B15			GEM-6315	6TM-S15	
C90	3300		21RI13042	BPD-0033		DD-332	BYA10D33	ED-0033		UC-5333	5GA-D33	
C91	.007	200	5KT41231	P288N-007		DDS6-703	CUB6D7			GEM-1627	M3-D7	
C92	10000		21KT37900	BPD-01		DD-103	BYA5DI	ED-01		DC5II	58K-SI	
C93	.01	600	5RI22265	P688N-01		DD-103	CUB6D1		GP-10000	GEM-611	6TM-S1	
C94	.05	600	5RI22181	P688N-05		DF-503	CUB6D5			GEM-615	6TM-S5	
C95	.05	200	5RI21005	P288N-05		DF-503	CUB305			GEM-215	2TM-S5	
C96	.03	600	5RI23079	P688N-03		DD-303	CUB6D3	ED-02		GEM-623	6TM-S3	
C97	1000	2000	21RI24455	BVD-30-1000		DD30-102	HVB20D2	H13-1000		DC302	30HKD-D1	
C98	20000		21RI4182	BPD-02		DD-203	BYB5E2	ED-02			58K-S3	
C99	220		21RI25999	BPD-00022		DD-221	L10T22	ED-220		UC-5322	5GA-T22	
C100	220		21RI25999	BPD-00022		DD-221	L10T22	ED-220		UC-5322	5GA-T22	
C101	3300		21RI13042	BPD-0033		DD-332	BYA10D33	ED-0033		UC-5333	5GA-D33	
C102	.03	300	21RI2003	P288N-02		DD-303	CUB3E3	ED-03		GEM-613	3TM-S3	
C103	.0039	400	5KI21843	P488N-004		DD-392	CUB6D4			GEM-634	6TM-D4	
C104	150		21RI22238	M750-SI 150		TCM-150	C10T1U		TCT-150		5TCU-T15	N750 10%
C105	680		5KT36046	1466-00068			1R5T68				MS-368	10%
C106	390		21KT35757	1469-00039			5R5T39				MS-339	10%
C107	5000		21A739296	BPD-005		DD-502	BYA10D6	ED-005		DC525	58K-D6	
C108	.1	400	5RI21006	P488N-1		DF-104	CUB4P1			GEM-401	4TM-P1	
C109	.1	600	5RI21006	P488N-1		DF-104	CUB4P1			GEM-601	6TM-P1	
C110	.1	400	5RI21869	P688N-1		DF-104	CUB4P1			GEM-601	6TM-P1	
C111	.05	1000	5RI21870	P108N-05			CUB1D5			GEM-1015	10TM-S5	
C112	.05	300	5RI21005	P388N-05		DF-503	CUB3D5			GEM-215	2TM-S5	
C113	56	3000	21RI7003									10%
C114	56	3000	21RI7008									10%
C115	82	3000	21RI20150									10%
C116	.25	400	5RI21788	P488N-25			CUB4P25			GEM-4025	4TM-P25	
C117	10000	1400	21RI24823	DAC-27		DD16-103	CUB16S1				BL-S10	
C118	10000	1400	21RI24823	DAC-27		DD16-103	CUB16S1				BL-S10	
C119	10000		21R482726	BPD-01		DD-103	BYA5DI	ED-01		DC-5II	58K-SI	
C120	470		21RI14554	BPD-00047		DD-471	BYA10T47	ED-470		UC-5347	5GA-T47	
C121	470		21RI24554	BPD-00047		DD-471	BYA10T47	ED-470		UC-5347	5GA-T47	
C122A	800		21R400943	BPD-0008		DD-801	L10T8	ED-0008				
B	800			BPD-0008		DD-801	L10T8	ED-0008				
C123	5000		21A739296	BPD-005		DD-502	BYA10D6	ED-005		DC525	58K-D6	
C124	5000		21A739296	BPD-005		DD-502	BYA10D6	ED-005		DC525	58K-D5	
C125A	1000			BPD-32000		DD3-102	BYC8D01	ED8-001		DCD52	58K-2S1	
B	1000											

① A 27MMF (Part #21R22050) is used in tuner WYT-96Y.

CONTROLS

ITEM No	RATING: RESIST OHMS	RATING: WATTS	REPLACEMENT DATA: MOTOROLA Part No.	CENTRALAB Part No.	CLAROSTAT Part No.	IRC Part No.	MALLORY Part No.	INSTALLATION NOTES
R1A	250Ω	½	18KT43067	F1-0			UI103B	Contrast
B	2Meg	½		R2-T2			Not Req.	Volume-Tap ② 1.2Meg
C	Switch			K3-1			Not Req.	
R2A	100K	½	18KT39549	AB-40 *	A47-100K-8 *		PTA15L	Brightness
B	Shaft			AK-19	RN-3		Not Req.	
R3A	3Meg	½	18KT39566	AB-75 *	A47-2Meg-8*		PTA35L	Vert. Hold
B	Shaft			AK-19	RN-3		Not Req.	
R4A	4Meg	½	18KT43534	AB-86 *	A47-4Meg-8*		PTA40L	Vert. Size
B	Shaft			AK-19	RN-3		Not Req.	
R5A	2Meg	½	18KT43523	AB-76 *	A47-2Meg-8*		PTA26L	Vert. Lin.
B	Shaft			AK-19	RN-3		Not Req.	
R6A	100K	½	18KT39549	AB-40 *	A47-100K-8*		PTA15L	Horiz. Hold
B	Shaft			AK-19	RN-3		Not Req.	

* Enlarge mounting hole.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING: OHMS	RATING: WATT	MOTOROLA Part No.	NOTES
R7	1500Ω	2	6R2006	
R8	22K		6R6028	
R9	91Ω 5%		9RI5891	
R10	1.5Meg 5%		9RI27000	
R11	100K		6R6075	
R12	15K		6R3119	
R13	2300Ω		6R6434	
R14	270K		6R6414	
R15	8200Ω	1	6RI25833	
R16	15K		6R3119	
R17	470Ω		6R3949	
R18	15K		6RI24551	
R19	4700Ω		6R6039	
R20	33K		6R6467	
R21	33K		6R6410	
R22	27K		6R6424	
R23	1000Ω		6R6301	
R24	8200Ω	3	17KT39283	
R25	47Ω		6R5550	
R26	27K		6R6434	
R27	1000Ω		6R6239	
R28	8200Ω	3	17KT39283	
R29	47Ω		6R5550	
R30	47K		6R6048	
R31	1200Ω		6R6393	
R32	680K		6R6475	
R33	2.2Meg		6R6433	
R34	8200Ω	3	17KT39283	
R35	120Ω		6R5551	
R36	68K		6R6301	
R37	47K		6R6048	
R38	39000Ω		6R6569	
R39	10K		6R6054	

RESISTORS (cont)

ITEM No.	RATING: OHMS	RATING: WATT	MOTOROLA Part No.	NOTES
R40	68K		6R6301	
R41	33K		6R6013	
R43	330K		6R3096	
R43	220K		6R6407	
R44	100K		6R6031	
R45	220K		6R6429	
R46	33K		6R6012	
R47	18K		6R6561	
R48	5600Ω	10	17KT44407	
R49	56K		6R6378	
R50	47K	4	17KT43157	
R51	4700Ω		6R6039	
R52	1000Ω		6R6301	
R53	47K		6R6048	
R54	150Ω		6R6573	
R55	2200Ω		6R6290	
R56	470K		6R6377	
R57	180K		6R6475	
R58	82K		6R5644	
R59	560K		6R5897	
R60	330Ω		6R3933	
R61	560Ω		6R6231	
R62	2.2Meg		6RI27001	
R63	470Ω	2	6R2010	
R64	100Ω		6R6218	
R65	22Ω	1	6R6341	
R66	330Ω	1	6R6354	
R67	470K		6R6377	
R68	5.3Meg		6R6497	
R69	2.2Meg		6R6433	
R70	56K		6R6378	
R71	560K		6R5897	
R72	27K	1	6R6434	

ITEM No	RATING: OHMS	RATING: WATT	MOTOROLA Part No.	NOTES
R73	3200Ω		6R6069	
R74	180K		6R6444	
R75	2200Ω		6R6069	
R76	18K		6KI22846	
R77	5.6Meg		6KI24781	
R78	1Meg		6R6046	
R79	1Meg		6R6004	
R80	18K		6R6477	
R81	8200Ω		6R3004	
R82	180K		6R6444	
R83	18K		6R559I	
R84	22K		6KI25568	
R85	470K		6R6032	
R86	220K		6R6407	
R87	22K		6KI25568	
R88	390Ω	1	6R6330	
R89	560Ω		6KI23803	
R90	680Ω		6KI22802	
R91	12Ω	1	6KI18226	
R92	470K		6R6377	
R93	470K		6R6377	

ITEM No	RATING: OHMS	RATING: WATT	MOTOROLA Part No.	NOTES
R94	4.7Meg		6RI222	
R95	4.7Meg		6RI222	
R96	8200Ω		6R3004	
R97	100Ω		6R6229	
R98	39K		6R6467	
R99	220K		6R6407	
R100	56K		6R6378	
R101	3900Ω		6R5859	
R102	680Ω		6R6428	
R103	470Ω		6R3949	
R104	1Meg		6R6046	
R105	220K		6R6407	
R106	8200Ω	2	6R6032	
R107	6800Ω	1	6R4904Q2	
R108	1.8Ω		17KT42915	
R109	27K	1	6R6437	
R110	12Ω			Note 1
R111	350 9%	15	17B739319	
R112	6Ω		6RI5236	Note 2
R113	7.5Ω	10	17KT44340	
R114	10K	2	17KT44466	

Note 1. Not used in some versions.
Note 2. Special temperature compensating resistor - 6Ω Nok, 200Ω Cold.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA Part No.	Halldorson Part No	Merit Part No	Stancor Part No	Thordarson Part No	Triad Part No	NOTES
T1	Vert. Output	25C743634 ①	21W00 ①	A-2923 ①	VO-100 ①	28S72 ①	A-18X	
T2A	Yoke-Horiz.(24MH)	24D744322	DF610	MDF-92	Y90F10/43	DY-16	Y-46 &	
B	(90°)-Vert.(42.5MH)		4	4	4	4	NW4	
	Yoke Clamp	43K743456						
M6	Width Sleeve	14A743974						
M7	Rear Cover & Centering Device	48A743407						
T3	Horiz. Output	24C744042 ①						
	Primary Coil	24C744044						
	Secondary Coil	24C744042						

① Connect as autoformer.
② Drill new mounting hole(s).
③ Cut tape banking lead.
④ Use original rear cover and centering device, width sleeve and connect same as original. Use original horizontal damping network, if necessary.
⑤ Complete transformer.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: MOTOROLA Part No.	Halldorson Part No	Merit Part No	Stancor Part No	Thordarson Part No	Triad Part No	NOTES
T4	5000Ω	3-4Ω	25K743210	Z1107	A-2930	A-3277	34S51	S-3X	

SPEAKER

ITEM No.	TYPE: SIZE	TYPE: FIELD	TYPE: V C IMP	REPLACEMENT DATA: MOTOROLA Part No.	QUAM Part No.	NOTES
SP1	5"	PM	3-4Ω	50KT39371	52A1	① Alternate part number.
	5"	PM	3-4Ω	50DT39234 ①	52A1	

COILS (RF-IF)

ITEM No.	USE	MOTOROLA Part No.	NOTES
L1	Ant. Coil	24C744200	
L3	Ant. Coil	24C744300	
L4	IF Trap Coil	1B743982	
L4	IF Trap Coil	1B743980	
L5	IF Trap Coil	34KT43330	
L6	IF Trap Coil	1B743983	
L7	IF Trap Coil	34B743947	
L8	Ant. Coils	1V743882	Channels 2-13, complete wafer assy., includes C9, C11, C13
L9	Neut. Coil	34A739397	

ITEM No.	USE	MOTOROLA Part No.	NOTES
L10	RF Coils	1V743447	Channels 2-13, Complete wafer assy., includes C8, C10, R17
L11	Mixer Grid Coils	1V738869	Channels 2-13, Complete wafer assy., includes C30
L12	Osc. Coils	1V738861	Channels 2-13, Complete wafer assy., includes C36, C37, R13
L13	Mixer Plate Coil	24B739079	

ITEM No	USE	REPLACEMENT DATA: MOTOROLA Part No.	MEISSNER Part No.	MERIT Part No.	MILLER Part No.	NOTES
L14	47.25MC Trap	24KT43363	20-1049			
L15A	40MC Trap	34B739448				
B	Bandpass Coil					
L16	1st. Video IF	24KT43453	17-4532	TV-130	6319	
L17	2nd. Video IF	34B743233	17-4534	TV-130	6319	
L18	3rd. Video IF	24B743330	17-4533	TV-130	6319	
L19	4th. Video IF	24C743408				Includes M4
L20	Resonant Choke	24R118889		BC-586	4612	10 Microhenries
L21	Series Peaking Coil	34KT91446	19-1006	BC-586	4613	10 Microhenries, 3RC Part #CL-1
L22	Shunt Peaking Coil	34C736006	19-3180	TV-144	6130	180 Microhenries
L23	Series Peaking Coil	34KT44431	19-3100 *	TV-144 *	6131 *	100 Microhenries, wound on 68000 resistor
L24	4.5MC Trap	34KT39290			6136	
L25	Series Peaking Coil	34KT44429	19-4400 a		6136 a	400 Microhenries, wound on 12K resistor
L26	Shunt Peaking Coil	34KT44430	19-4400		6136	400 Microhenries
L27	Shunt Peaking Coil	34KT43340				1400 Microhenries, wound on 3700Ω resistor
L28	RF Choke	34KT43727			4611	7.5 Microhenries, 3RC Part #CLA
L29	1st. Sound IF	34B743463				
L30	2nd. Sound IF	34B739843	17-3496 a	TV-113 a	6303a	
L31	Quadrature Coil	34B743425				
L32	RF Choke	34KT43727			4611	7.5 Microhenries, 3RC Part #CLA
L33	RF Choke	34KT43727			4611	7.5 Microhenries, 3RC Part #CLA

MOTOROLA MODELS Y21K70B, Y21K70M, Y21T37B, Y21T37M, 21K70B, 21K70M, 21T37B, 21T37M (Ch. TS-542, Y)

FOLDER 1

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (cont)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		MOTOROLA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L34	Fil. Choke	24K743675	19-1001	BC-562	4604	1.5 Microhenries
L35	Fil. Choke	24K743675	19-1001	BC-562	4604	1.5 Microhenries
L36	Fil. Choke	24K743675	19-1001	BC-562	4604	1.5 Microhenries
L37	Fil. Choke	24K743675	19-1001	BC-562	4604	1.5 Microhenries

* Parallel 5600Ω resistor.
▲ Parallel 12K resistor.
▲ C62 (Shunting Secondary Coil) may have to be removed.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA						NOTES
	PRI.	SEC.	MOTOROLA PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	
L38	35Ω		24B743426	19-1576 ♦	TV-163 ♦	6210 ♦		HS-5 ♦	12-45 Millihenries ♦ Fabricate mounting.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L39	.280A	46Ω	1.5 HY.	25K743212-Y ①	C5037 ②	C-2974	C-2326 ②	26C43	C-23X

① Alternate part #24K743212.
② Drill new mounting holes.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	MOTOROLA PART No.	REPLACEMENT DATA
K1	Antenna Isolation	470MMF ⓐ 1500V, .3-1Meg	51B740235	Centralab RC-471
K2	Antenna Isolation	470MMF ⓐ 1500V, .3-1Meg	51B740235	Centralab RC-471
K3	Tone Compensation	3300MMF, 68K	51K744910 ①	

① Some versions may use individual components in this application.

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	MOTOROLA PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.270A	48K122479 ①②	1023A ①	1N1007 ③	RS350SL ①	350A ①	① Selenium type. ② Alternate part #48K125651. ③ Germanium type.
M2	.270A	48K122479 ①②	1023A ①	1N1007 ③	RS350SL ①	350A ①	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MOTOROLA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M3	N	1 6/10A 125V S/B	65K744238	9K744239	3301.6 (N 1 6/10A 125V S/B)	346016	N 1 6/10	HN 1 3/10 to 1 3/4

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		MOTOROLA PART No.	CBS PART No.	SYLVANIA PART No.	
M4		48C739300	1N60	1N60	Video Detector (Clip-in)

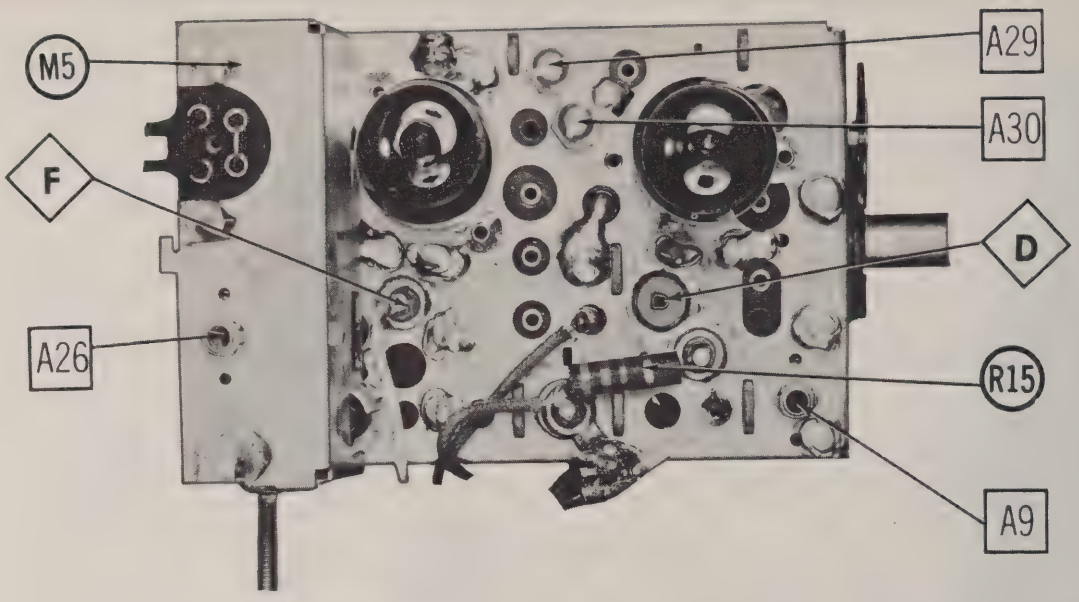
MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M5	Tuner	1V745228	VHF (TT-96) Chassis TS-542
	Tuner	1V745229	VHF (WTT-96Y) Chassis TS-542Y
	Tuner	77K744280	UHF Chassis TS-542Y
M6	Width Sleeve	14A743974	
M7	Centering Device	48A743407	Includes yoke rear cover
M8	Magnet	48B737365	Anti-Pin Cushion (2 used)

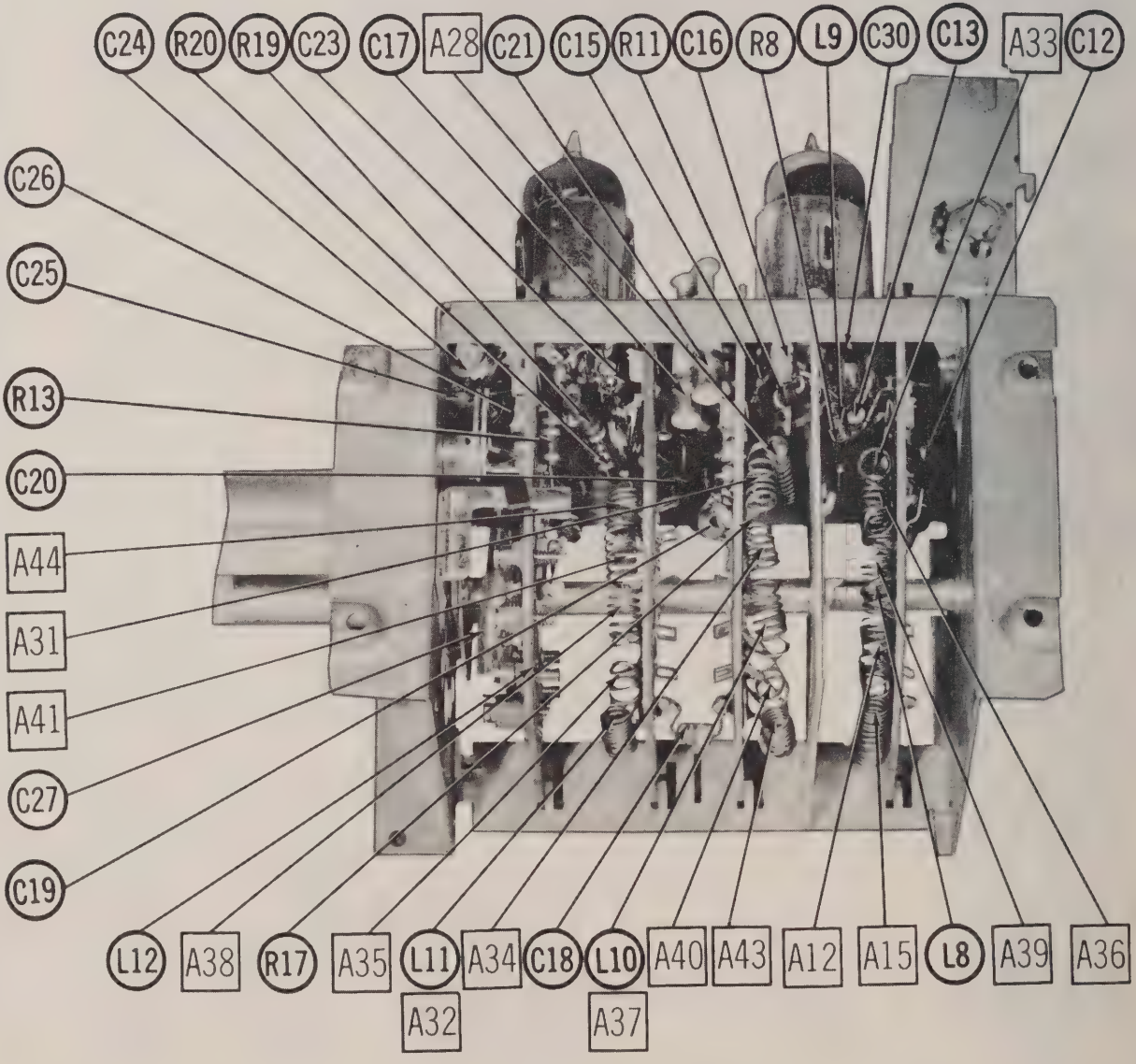
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

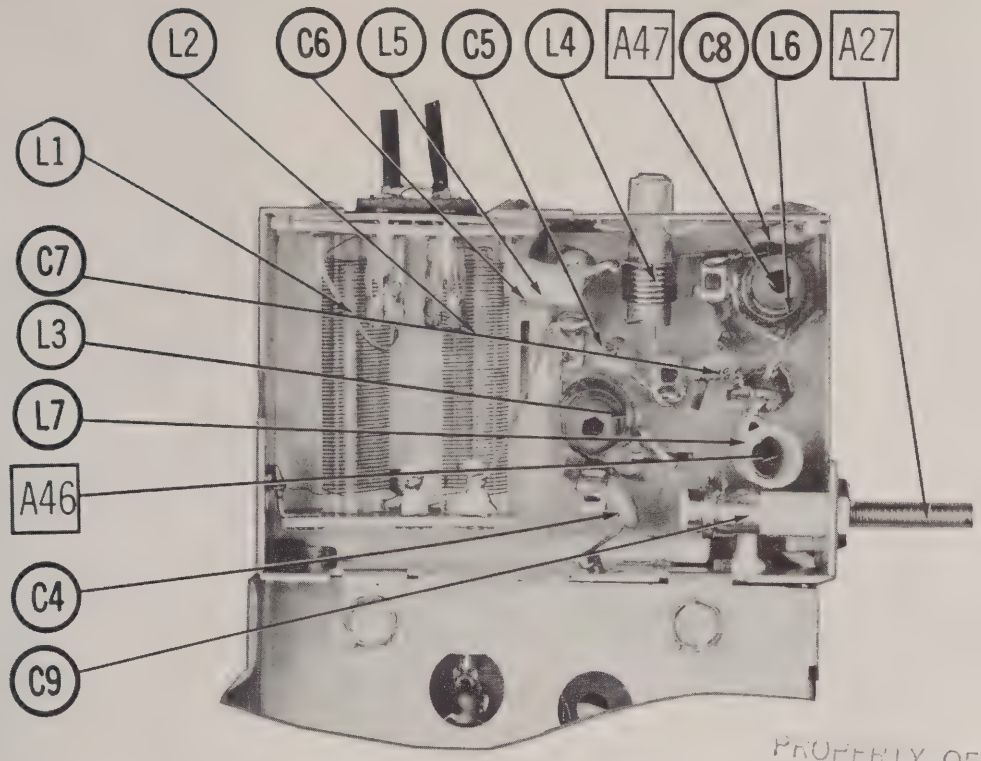
NAME	PART NO.	DESCRIPTION
Safety Glass	61C743966	
Bezel	13K743958	
Knob	36K741110	VHF Channel Selector - VHF Models
Knob	38C738681	VHF Channel Selector - UHF-VHF Models
Knob	36C738680	Fine Tuning
Knob	36B743434	On-off-volume
Knob	36B743435	Contrast
Knob	36K740614	Brightness and vertical hold
UHF Dial	34K744101	
Cabinet	16E743770	Models 21T37M, Y21T37M
Cabinet	16K743771	Models 21T37B, Y21T37B
Cabinet	16K743774	Models 21K70B, Y21K70B
Cabinet	16E743773	Models 21K70M, Y21K70M
Cabinet Leg	16K743778	Models 21K70B, Y21K70B
Cabinet Leg	16C743777	Models 21K70M, Y21K70M



RF TUNER-TOP VIEW



RF TUNER-LEFT SIDE



RF TUNER-REAR VIEW

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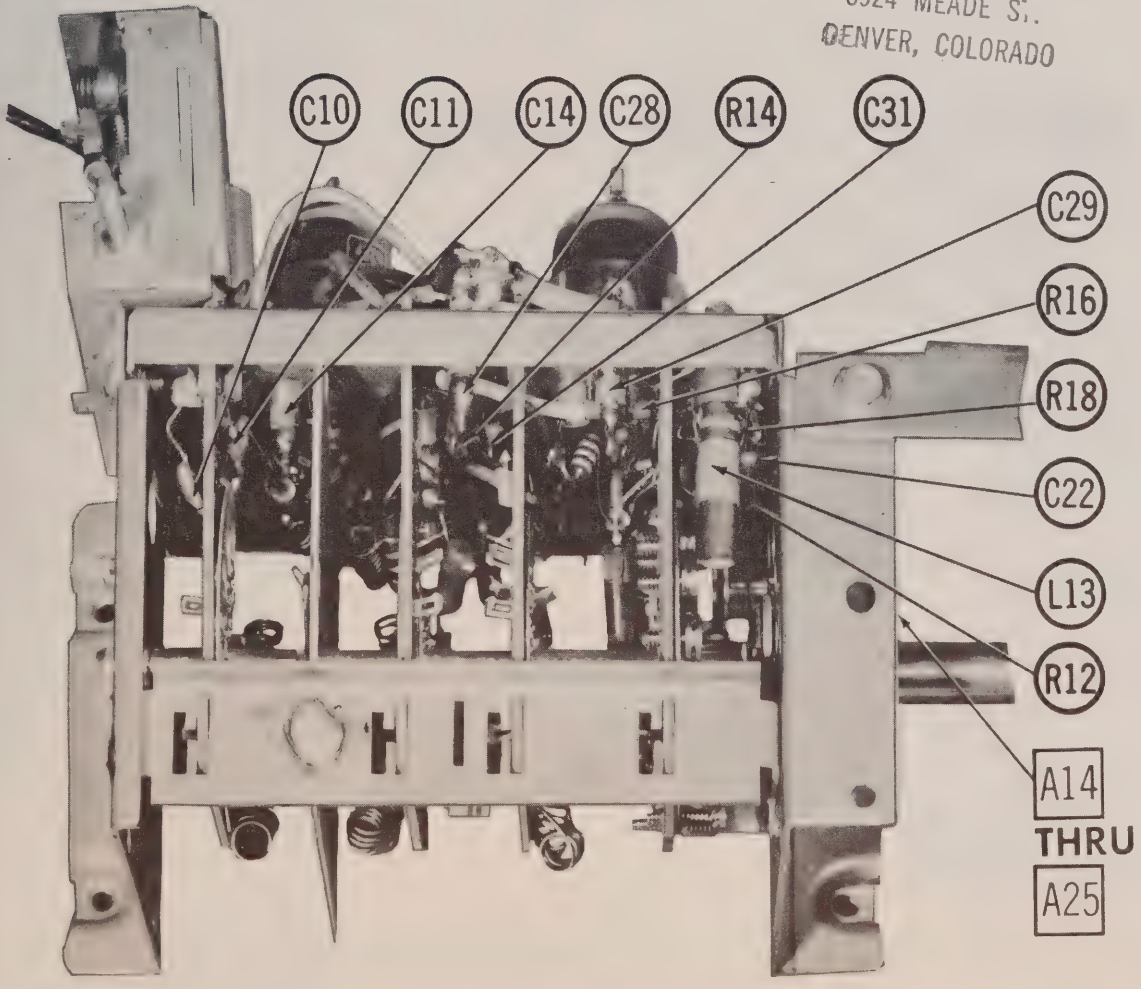


RF TUNER-RIGHT SIDE

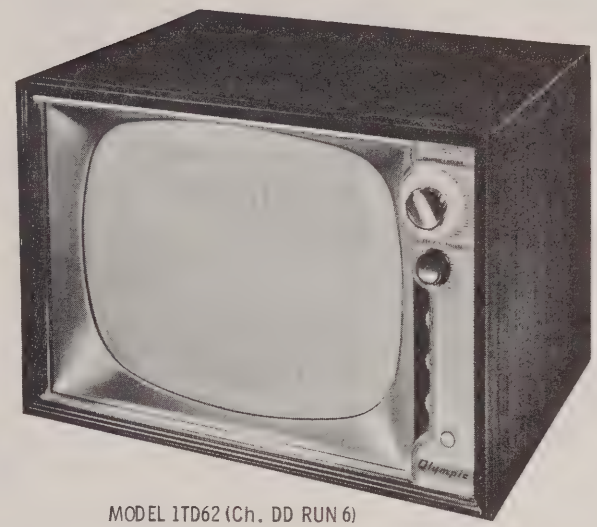
FOLDER 1

OLYMPIC MODELS 1CD73, U, 1CD74, U, 1KD81, U, 1KD82, U, 1KD83, U, 1TD62, U, 4KH85, U, 4KH86, U (Ch. DD, DDU, DH, DHU, Runs 5 and 6)

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 5 push-on type knobs from the front.
2. Remove 1 wood screw holding the rear cover and remove the rear cover.
3. Remove the picture tube socket, yoke plug, HV lead and speaker plug.
4. Remove the bolt holding the top chassis brace.
5. Remove 2 chassis bolts from the bottom.
6. Remove the chassis.



MODEL 1TD62 (Ch. DD RUN 6)

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DENVER, COLORADO

TRADE NAME	Olympic	
MODELS	1CD73, 1CD74, 1KD81, 1KD82, 1KD83, 1TD62	CHASSIS: DD Runs 5, 6
	1CD73U, 1CD74U, 1KD81U, 1KD82U, 1KD83U, 1TD62U	DDU Runs 5, 6
	4KH85, 4KH86	DH Runs 5, 6
	4KH85U, 4KH86U	DHU Runs 5, 6
MANUFACTURER	Olympic Radio & Television Inc., 34-01 38th. Ave., Long Island City 1, N.Y.	
TYPE SET	Television Receiver	
TUBES	Seventeen	
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING 165 Watts, 1.4 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF,	Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF oscillator is possible by removing the channel selector and fine tuning knobs. Set the fine tuning at the center of its range. One slug for HIGH band adjustment is located at 11 o'clock, and should be adjusted first. The LOW band adjustment is located at 3 o'clock. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 5 push-on type knobs. Remove 3 wood screws holding the escutcheon and the escutcheon. Remove 3 wood screws holding trim at the top of the safety glass. Slide glass to right and remove.

FOCUS

The focus may be varied by means of a screw in the focus magnet. Using a non-ferrous screwdriver adjust the screw in or out for best focus.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

For adjustment of the horizontal oscillator, it is necessary to remove the rear cover and supply power to set. Set the horizontal hold at the center of its range and adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally. (For location, see tube placement chart).

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate audio detector buzz, adjust the buzz control for MINIMUM buzz and maximum sound. (For location, see tube placement chart).

FUSES

One fuse is used for horizontal sweep circuit protection. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by means of a centering arm. Adjust the arm from side to side, and up and down until the picture is properly centered.

OLYMPIC MODELS 1CD73, U, 1CD74, U, 1KD81, U, 1KD82, U, 1KD83, U, 1TD62, U, 4KH85, U, 4KH86, U (Ch. DD, DDU, DH, DHU, Runs 5 and 6)

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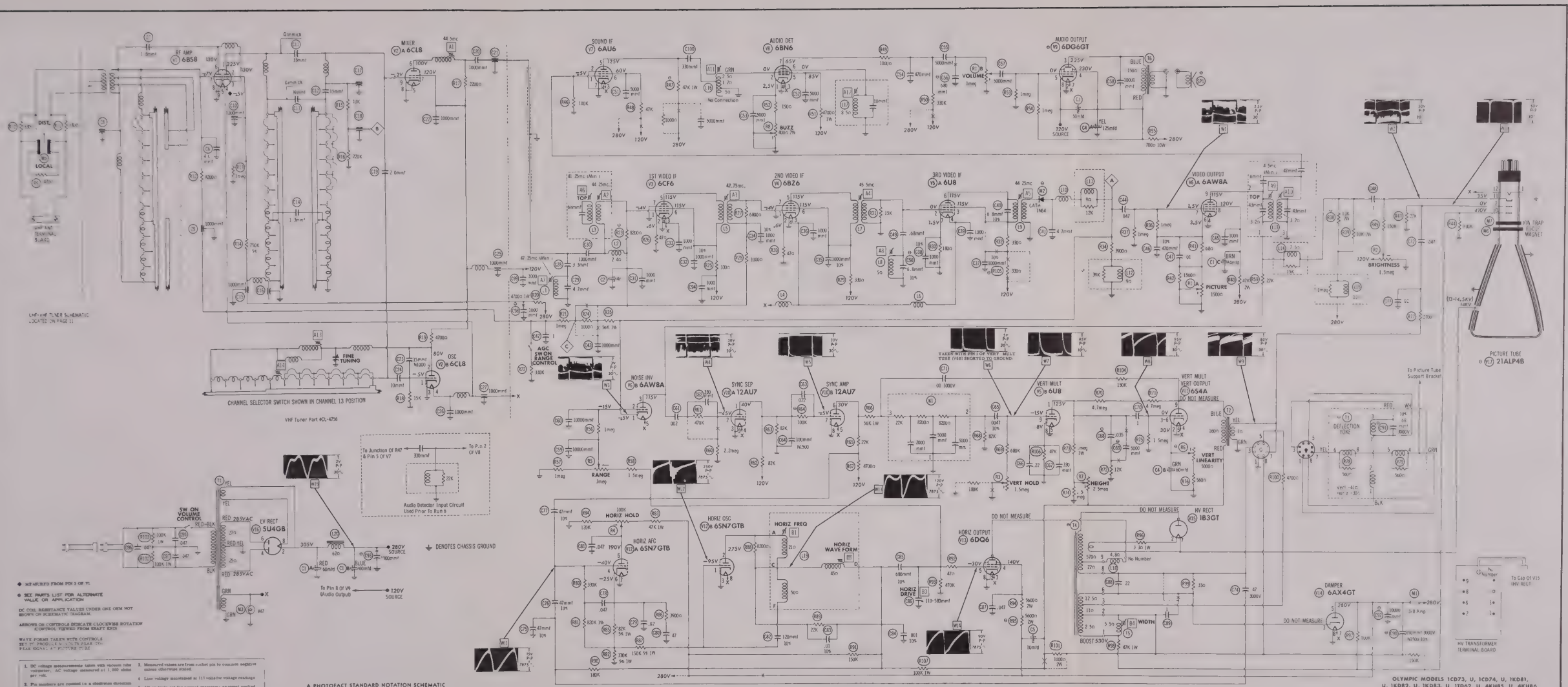

◆ MEASURED FROM PIN 3 OF V7.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

ARROWS OR CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 3 VOLTS PEAK TO PEAK SIGNAL AT PICTURE TUBE

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1,000 ohms per volt.
2. Pin numbers are counted in a clockwise direction as bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings
5. All controls set for normal operation; no signal applied.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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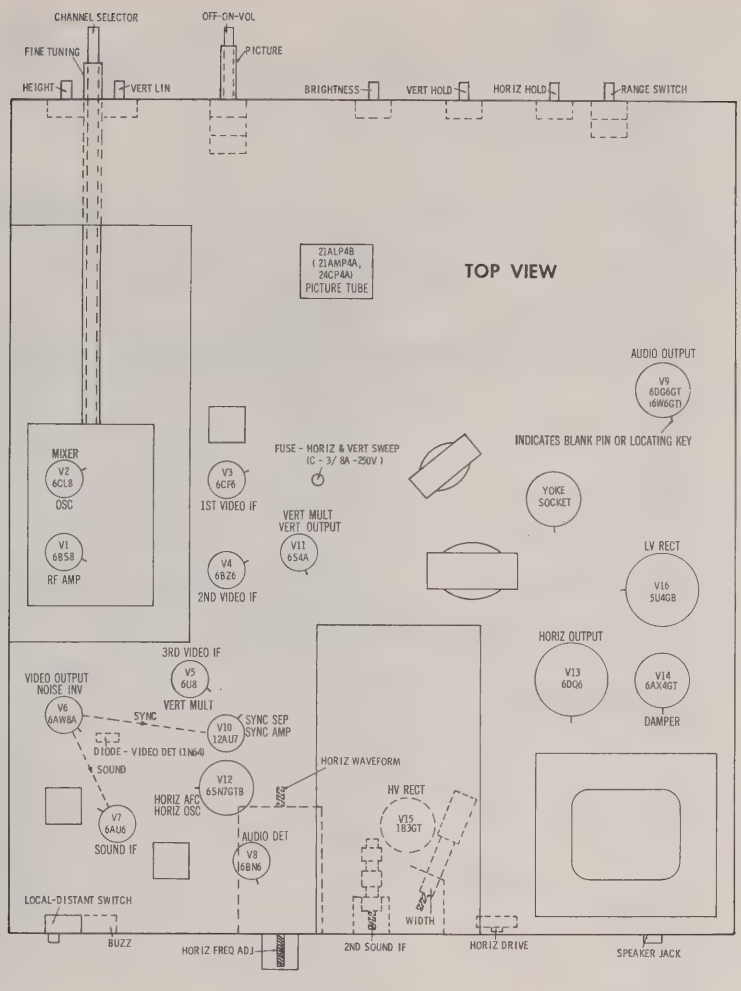
OLYMPIC MODELS 1CD73, U, 1CD74, U, 1KD81, U, 1KD82, U, 1KD83, U, 1TD62, U, 4KH85, U, 4KH86, U (Ch. DD, DDU, DH, DHU, Runs 5 and 6)

TUBE PLACEMENT CHART



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TUBE FAILURE CHECK CHART

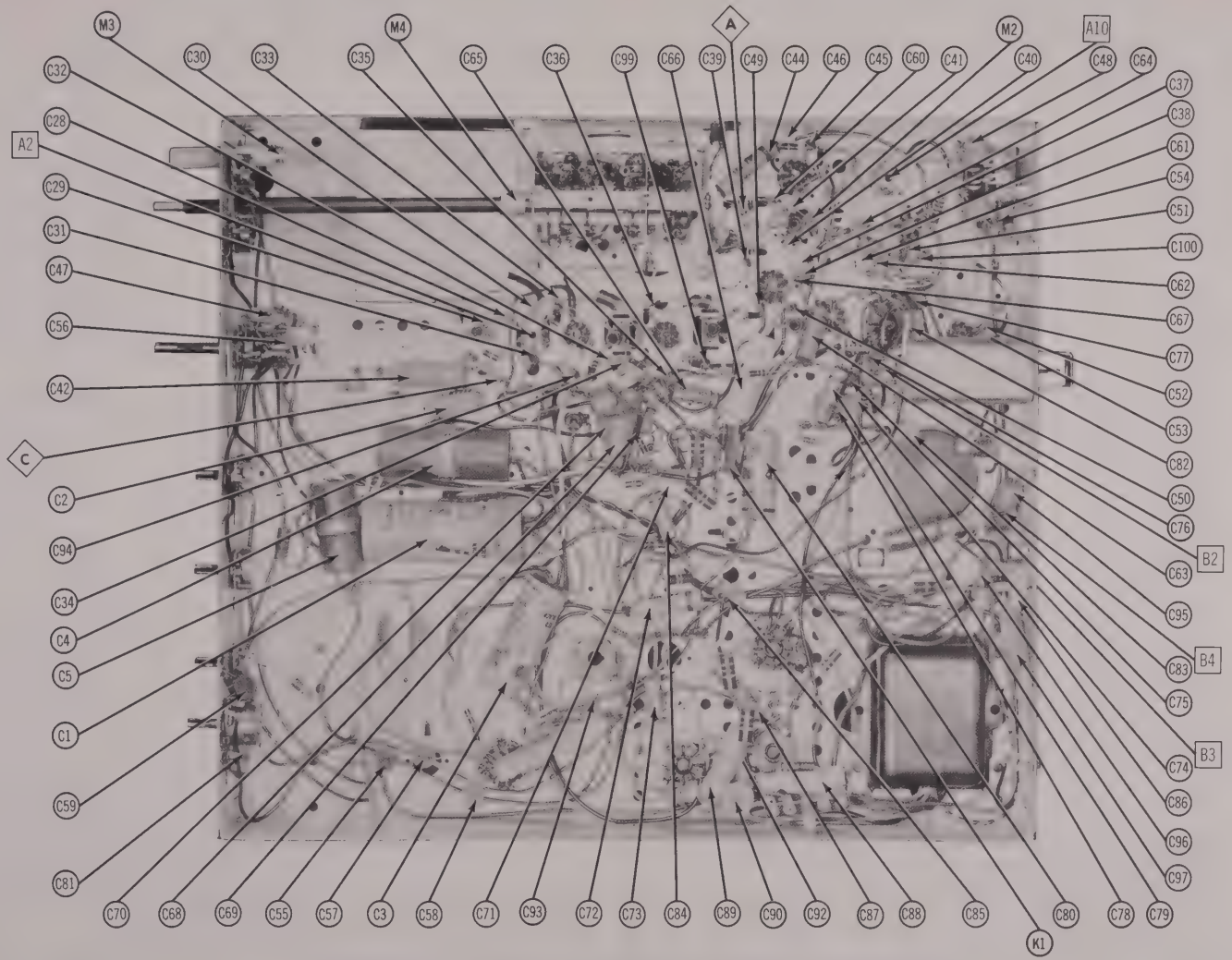
The following chart lists tubes whose failures are most likely to produce the indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound - **V16**

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster - **V3, V4, V5, Diode (M2), V6, V9**
No pic, no sound, has snow - **V1, V2, V3, V9**
No pic, has sound, has raster - **V6, V17**
Has pic, no sound - **V7, V8, V9**

SYNC FAILURE
No vert. sync - **V6, V10, V9**
No horiz. sync - **V6, V10, V12, V9**
No vert. or horiz. sync - **V6, V10, V9**

SWEEP FAILURE
No raster, has sound - **Fuse (M1), V12, V13, V14, V15, V17**
No vertical deflection - **V5, V11**
Poor vert. linearity or foldover - **V5, V11**
Poor horiz. linearity or foldover - **V12, V13, V14**
Narrow picture - **V12, V13, V14, V16**
Vert. off freq. - **V5, V11**
Horiz. off freq. - **V12**



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Remove the horizontal oscillator tube (V12) and the horizontal output tube (V13) from its socket to disable the high voltage.
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Use lowest negative scale on VTVM.
Preset A2 and A6 out of the coils by turning A2 fully clockwise and A6 fully counter clockwise.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	10MMF	High side to point Ⓑ. Low side to chassis.	44.5MC (Unmod)	Any non-interfering channel	DC probe thru 100K to point Ⓐ. Common to chassis.	A1	Use only enough generator output to provide a usable pattern on VTVM. Adjust for maximum deflection.
2.	"	"	44.25MC	"	"	A2	"
3.	"	"	42.75MC	"	"	A3	"
4.	"	"	45.5MC	"	"	A4	"
5.	"	"	44.25MC	"	"	A5	"
6.	"	"	41.25MC	"	"	A6	Adjust for maximum deflection.
7.	"	"	47.25MC	"	"	A7, A8	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the negative lead of a 4 volt bias supply to point Ⓒ. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	10MMF	High side to point Ⓑ. Low side to chassis.	44.5MC (10MC Swp)	41.25MC 42.5MC 45.75MC 47.25MC	Any non-interfering channel	Vert. Amp. thru detector (Fig. 1) to pin 5 (plate) of 6CF6 (V3). Low side to chassis.		Check for response curve similar to Fig. 2 with markers as shown. If necessary, retouch A1, A2, A6 and A7 to obtain desired response.
9.	"	"	"	"	"	Vert. Amp. thru 100K to point Ⓐ. Low side to chassis.		Check for response similar to Fig. 3 with markers as shown. If necessary, retouch A3, A4, A5 and A8 for desired response. DO NOT retouch A1, A2, A6 or A7.

4.5MC TRAP ALIGNMENT

Set the contrast control fully clockwise.
Remove 6U8 (V5) from its socket.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10.	.01MFD	High side to point Ⓐ. Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	DC probe thru detector (Fig. 4) to pin 11 (cathode) of picture tube. Low side to chassis.	A9	Use maximum generator output. Adjust A9 for MINIMUM deflection. Replace V5 in its socket.

SOUND IF ALIGNMENT

Connect the DC probe of the VTVM thru 1Meg to pin 1 (grid) of the 6AU6 (V7). Common to chassis. Use the negative 30 volt scale of the VTVM. Adjust A10 and A11 for maximum deflection. Connect the output meter across the audio output transformer secondary. Set the buzz control (R8) at the center of its range. Adjust A12 for maximum deflection. Adjust the buzz control for MINIMUM buzz in the sound. Retouch A12 for maximum volume.

OSCILLATOR ALIGNMENT

Bottom cover and tuner shields must be in place before making adjustments.
Set the fine tuning to the center of its range.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
11.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	237.5MC (Unmod)	13	Vert. Amp. thru 10K to point Ⓑ. Low side to chassis.	A13	Adjust for zero beat on scope.
12.	"	"	103.5MC	6	"	A14	"

RF AND MIXER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

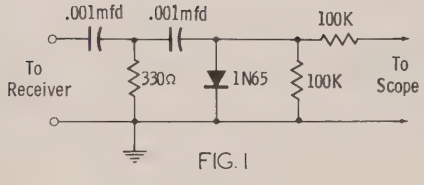


FIG. 1

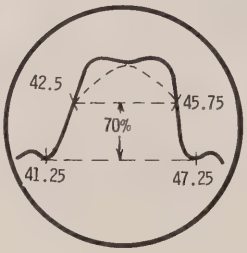


FIG. 2

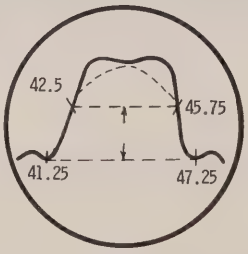


FIG. 3

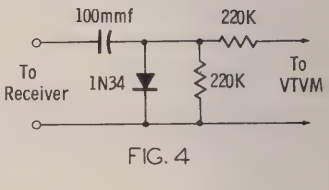
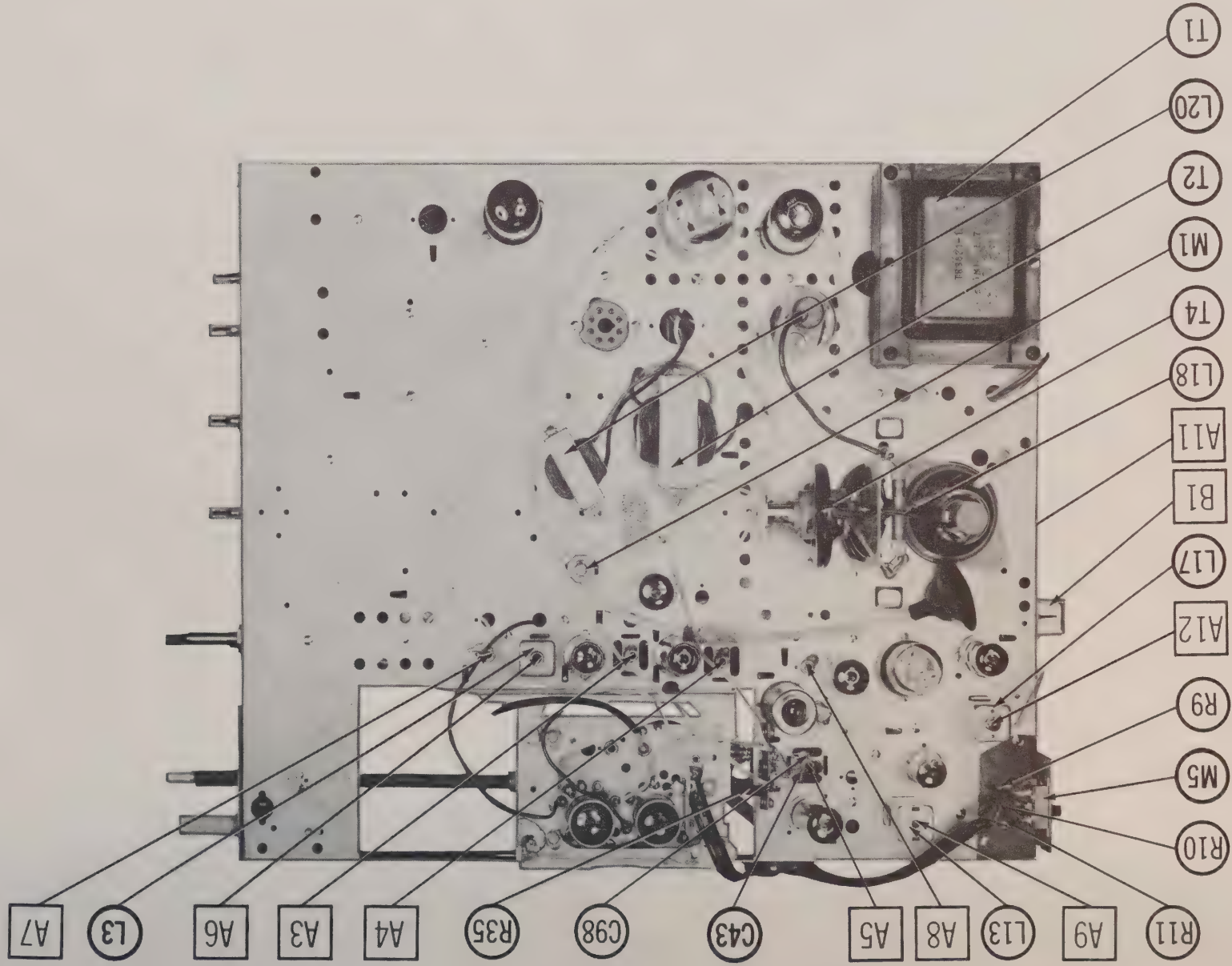
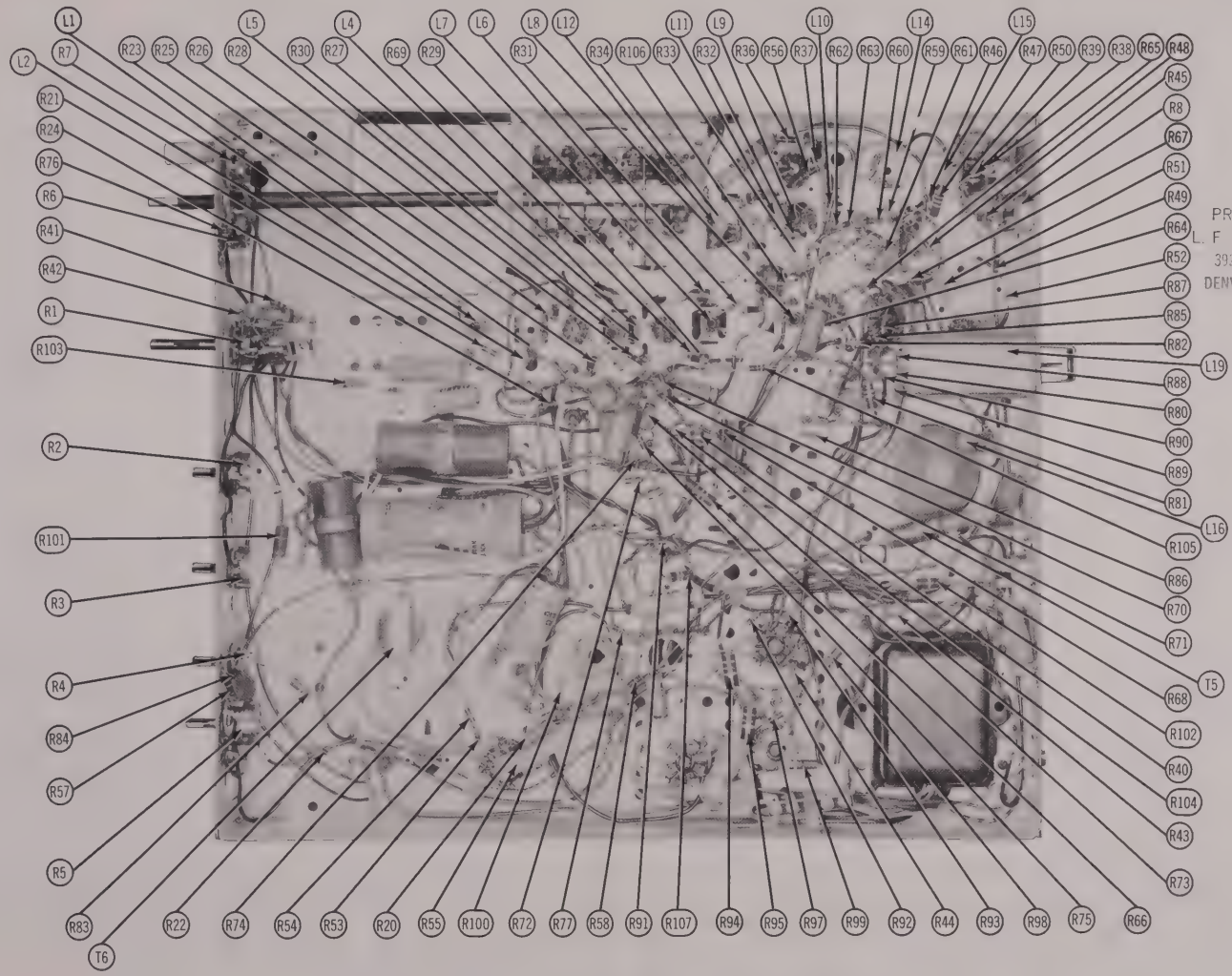


FIG. 4

CHASSIS TOP VIEW





PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BS8	† 4700Ω	440K	INF	.1Ω	0Ω	INF	260K	0Ω	0Ω
V2	6CL8	15K	■ 4700Ω	0Ω	.1Ω	0Ω	■ 2200Ω	■ 0Ω	0Ω	230K
V3	6CF6	60K	47Ω	.1Ω	0Ω	■ 330Ω	■ 330Ω	0Ω		
V4	6BZ6	60K	47Ω	.1Ω	0Ω	■ 330Ω	■ 330Ω	0Ω		
V5	6U8	• ‡1.2Meg	.1Ω	■ 660Ω	.1Ω	0Ω	■ 660Ω	180Ω	47K	•1.2Meg
V6	6AW8A	3900Ω	•2.3Meg	† 27K	0Ω	.1Ω	• 750Ω	460K	† 47K	† 5000Ω
V7	6AU6	100K	0Ω	.1Ω	0Ω	† 47K	■ 47K	0Ω		
V8	6BN6	• 250Ω	3Ω	.1Ω	0Ω	■ 4700Ω	8.5Ω	■ 330K		
V9	6DG6GT	0Ω	0Ω	† 850Ω	† 700Ω	500K	TP	.1Ω	¶	
V10	12AU7	■ 40K	2.2Meg	0Ω	.1Ω	.1Ω	■ 23K	130K	0Ω	0Ω
V11	6S4A	NC	• 2600Ω	1.5Meg	.1Ω	0Ω	1.5Meg	TP	0Ω	‡2500Ω
V12	6SN7GTB	480K	† 80K	0Ω	1.5Meg	• † 65K	410K	0Ω	.1Ω	
V13	6DQ6	0Ω	0Ω	NC	† 11K	360K	TP	.1Ω	0Ω	TOP CAP ‡26Ω
V14	6AX4GT	NC	NC	¶	NC	† 0Ω	NC	.1Ω	0Ω	
V15	1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ‡600Ω
V16	5U4GB	NC	¶	TP	25Ω	TP	27Ω	NC	¶	
V17	21ALP4B	0Ω	22K	PIN 10 ‡35K	PIN 11 • 190K	PIN 12 .1Ω				

¶ THIS READING CAN VARY GREATLY, (10K MINIMUM), DUE TO THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.

■ THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.

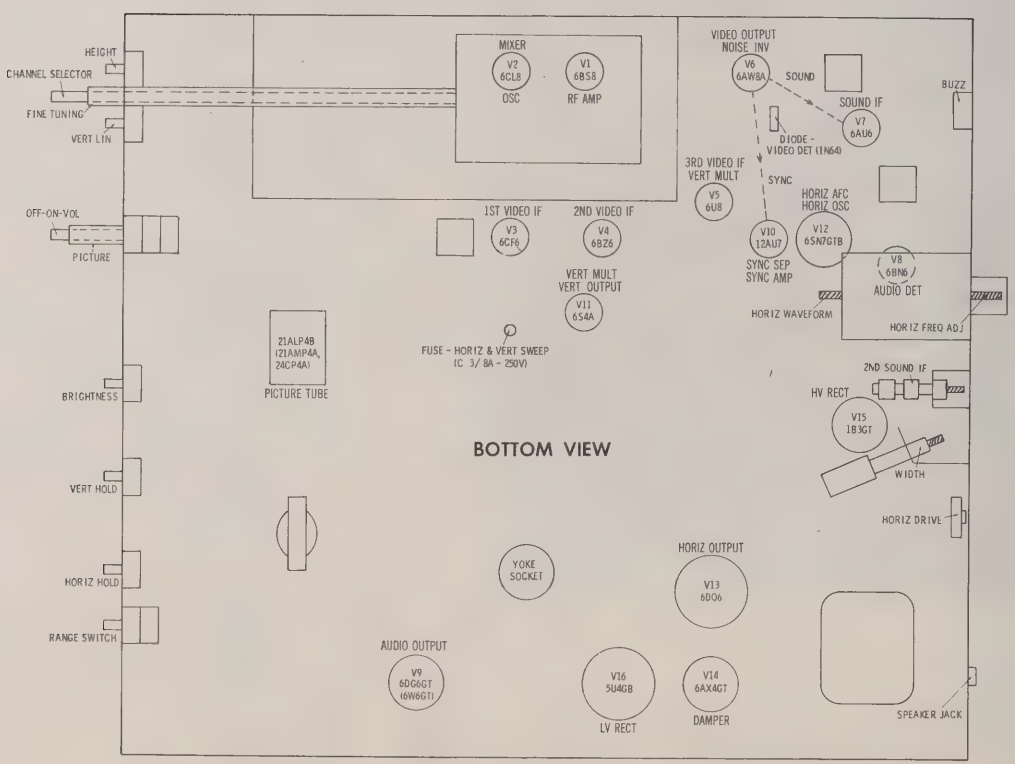
† MEASURED FROM 280V SOURCE.

‡ MEASURED FROM PIN 3 OF V14.

■ MEASURED FROM 120V SOURCE.

NC NO CONNECTION.

TP TIE POINT.



TUBE PLACEMENT CHART

PROPERTY OF
L. C. FLANKENSHIP
3824 MEADE ST.
DENVER, COLORADO

OLYMPIC MODELS 1CD73, U, 1CD74, U, 1KD81, U, 1KD82, U, 1KD83, U, 1TD62, U, 4KH85, U, 4KH86, U (Ch. DD, DDU, DH, DHU, Runs 5 and 6)

ALTERNATE TUNER SCHEMATIC

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1957

FOLDER 2

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	RF Amplifier	6BS8	
V2	Mixer -Osc	6CL8	
V3	1st Video IF Amp.	6CF6	
V4	2nd. Video IF Amp.	6BZ6	
V5	3rd. Video IF Amp. - Vert. Mult.	6U8	
V6	Video Output-Noise Inv.	6AW8A	
V7	Sound IF Amp	6AU6	
V8	Audio Det.	6BH6	

ITEM No	USE	TYPE	NOTES
V9	Audio Output	8DS6GT	Note 1
V10	Sync Sep. - Sync Amp.	12AU7	
V11	Vert. Mult.-Vert. Output	6S4A	
V12	Horiz. AFC-Horiz. Osc.	6SN7GTB	
V13	Horiz. Output	6DQ8	
V14	Damper	8AM6GT	
V15	HV Rectifier	1B3GT	
V16	LV Rectifier	5U4GB	

Note 1. A 6W6GT may be used in some versions.

PICTURE TUBE

ITEM No	REPLACEMENT DATA: OLYMPIC PART No	GENERAL ELECTRIC PART No	SYLVANIA PART No	NOTES
V17	21ALP4B	21ALP4B	21ALP4A	1 Aluminized
		21ALP4B 1	21ALP4A 1	2 Silver screen "85"
	21AMP4A	21ACP4A	21ACP4A/	
		21AMP4A	21AMP4A	
		21SSP4 1	21SSP4 2	
	24CP4A	24CP4A	24CP4A	
		24TP4/	24VP4A	
		24VP4A	24ADP4/	
		24ADP4 1	24TP4 2	

ELECTROLYTIC CAPACITORS

ITEM No	RATING: CAP	RATING: VOLT	OLYMPIC PART No	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No	PYRAMID PART No	SANGAMO PART No	SPRAGUE PART No
C1A	60	350	CO3380	PR3-035	BRHT0335	WT460		T-410	R2510 *
B	60	350						MT-4504	
C	4	350							
C2	4	50		PRS150V4	BRH4-50	TC30	TD-4-50	MT-0504	TVA-1402
C3	50	250	CO2088-1	PRS250V50	BR5025	TC59	TD-50-450	MT-4550	TVA-1713
C4A	60	200	CO3856	PR3-200	BRD0678	WD340		S-150	TVA-3536
B	125	50						MTB-5020	
C5	10	450	CO4022	PRS450V10	BR1045	TC72	TD-10-450	MT-4510	TVA-1705

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	OLYMPIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C6	4.0					C10V4C				
C7	1.8			NPO-S2 1.5		CO1V18C	TCO-1.8	ZT-5S15	5TCCB-V15	
C8										
C9	1000			EF-001	MFT-1000				503C-DI	
C10	1000			EF-001	MFT-1000				503C-DI	
C11	.33									
C12	15			NPO-S1 15	TCZ-15	C10Q15C	TCO-15	ZT-5S15	5TCC-Q15	
C13	.39									
C14	1.8			NPO-S1.1.5	TCZ-1R5	C10V15C	TCO-1.5	ZT-5S15	5TCCB-V15	
C15	1000			EF-001	MFT-1000				503C-DI	
C16										
C17										
C18										
C19	2.0			NPO-S1 2.2	TCZ-2R2	C10V2C	TCO-2.2		5TCCB-V22	
C20	1000			BPD-001	DD-102	BYA5D1	ED-1000	DC521	5HK-DI	
C21										
C22	1000			BPD-001	DD-102	BYA5D1	ED-1000	DC521	5HK-DI	N5000
C23	15									
C24	10			NPO-S1 10	TCZ-10	C10Q1C	TCO-10	ZT-561	5TCC-Q1	
C25	1000			EF-001	MFT-1000				503C-DI	
C26	1000			BPD-001	DD-102	BYA5D1	ED-1000	DC521	5HK-DI	
C27	1000			EF-001	MFT-1000				503C-DI	
C28	3.3			NPO-S1 3.3	TCZ-3R3	C10V33C	TCO-3.3	ZT-5533	5TCCB-V33	
C29	4.7		CO1083	NPO-S1 4.7	TCZ-4R7	C10V47C	TCO-4.7	ZT-5547	5TCCB-V47	
C30	1000		CO2-102X	BPD-001	DD-102	BYA5D1	ED-1000	DC521	5HK-DI	
C31	1000		CO2-102X	BPD-001	DD-102	BYA5D1	ED-1000	DC521	5HK-DI	
C32	1000		CO4837		1R5D1	ED-1000			M5-2I	10%
C33	1000		CO2-103X	BPD-001	DD-103	BYA5D1	ED-1000	DC521	5HK-DI	
C34	1000		CO4837		1R5D1	ED-1000			M5-2I	10%
C35	1000		CO4837		1R5D1	ED-1000			M5-2I	10%
C36	1000		CO2-102X	BPD-001	DD-102	BYA5D1	ED-1000	DC521	5HK-DI	
C37	1000		CO4837		1R5D1	ED-1000			M5-2I	10%
C38	1000		CO4837		1R5D1	ED-1000			M5-2I	10%
C39	1000		CO2-102X	BPD-001	DD-102	BYA5D1	ED-1000	DC521	5HK-DI	
C40	6.8			NPO-S1 6.8	TCZ-6R8	C10V68C	TCO-6.8	ZT-5568	5TCCB-V68	10%
C41	4.7		CO1083	NPO-S1 4.7	TCZ-4R7	C10V47C	TCO-4.7	ZT-5547	5TCCB-V47	
C42	.1	400		P4S8N-1	DF-104	CUB4P1			GEM-401	4TM-P1
C43	1000		CO2-102X	BPD-001	DD-102	BYA5D1	ED-1000	DC521	5HK-DI	
C44	.047	400		P4S8N-047	DF-503	CUB4S47			GEM-4147	4TM-S47
C45	1000		CO2-102X	BPD-001	DD-102	BYA5D1	ED-1000	DC521	5HK-DI	
C46	470				DE-471	SHSY47	ED-470		M5-347	10%
C47	.01	400		P4S8N-01	DS-103	CUB4S1	GP-10000	GEM-411	4TM-S1	
C48	.1	400		P4S8N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C49	68				TCZ-68S		TCO-.68			
C50	6.8			NPO-S1 6.8	TCZ-6R8	C10V68C	TCO-6.8	ZT-5568	5TCCB-V68	10% ①
C51	5000		CO2-502X	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C52	5000		CO2-502X	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C53	5000		CO2-502X	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C54	470		CO2-471M	BPD-0047	DD-471	BYA10T47	ED-470	UC-5347	SGA-T47	
C55	5000		CO2-502X	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C56	680			BPD-0068	DD-681	BYA10T68	ED-680	UC-5368	SGA-T68	③
C57	5000		CO2-502X	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C58	10000		CO2-103X	BPD-01	DD-103	BYA5S1	ED-01	DC511	5HK-S1	
C59	10000		CO2-103X	BPD-01	DD-103	BYA5S1	ED-01	DC511	5HK-S1	
C60	10000		CO2-103X	BPD-01	DD-103	BYA5S1	ED-01	DC511	5HK-S1	
C61	.002	600		P6S8N-002	DS-202	CUB6D2	GP-2000	GEM-623	6TM-D3	
C62	330		CO2-331M	BPD-0033	DD-331	LUT33	ED-330	UC-5333	SGA-T33	
C63	.022	400		P4S8N-022	DD-203	CUB4S22	ED-02	GEM-4122	4TM-S22	
C64	100									N1500
C65	.0047	600						GEM-16247		10%
C66	.22	200		P3S8N-22		CUB2P22		GEM-2022	2TM-P22	
C67	330		CO2-331M	BPD-0033	DD-331	LUT33	ED-330	UC-5333	SGA-T33	
C68	.035	600		P6S8N-033		CUB6S33		GEM-6133	6TM-S33	③
C69	5000		CO2-502X	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	④

PARTS LIST AND DESCRIPTIONS

COILS (cont)

ITEM No.	RATING: CAP.	RATING: VOLT	OLYMPIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C70	.1	400		P4S8N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C71	.01	1000		P1083N-01		CUB1S01		GEM-1101	1OTM-S1	
C72	.047	400		P4S8N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C73	.02	400		P4S8N-02	DD-203	CUB4S2	ED-02	GEM-412	4TM-S2	
C74	.47	3000								
C75	47			1469-000047	D6-470	22R5Q47	ED-47			
C76	47			1469-000047	D6-470	22R5Q47	ED-47		M5-447	20%
C77	47			1469-000047	D6-470	22R5Q47	ED-47		M5-447	20%
C78	.047	400		P4S8N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C79	.02	400		P4S8N-02	DD-203	CUB4S2	ED-02	GEM-412	4TM-S2	
C80	.47	300	CO5179	P3S8N-47		CUB3P47		GEM-3047	3TM-P47	
C81	.047	400		P4S8N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C82	120			1469-00012	D6-121	22R5T12	ED-120		M5-312	10%
C83	.01	600						GEM-1611		10%
C84	.001	600						GEM-1621		10%
C85	680			1464-00068		1R5T68	ED-680		M5-368	10%
C86	110-550									
C87	.047	400		P4S8N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C88	.22	200		P2S8N-22		CUB2P22		GEM-2022	2TM-P22	
C89	.1	400		P4S8N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C90	150	3000								N1500 10% ⑤
C91	68	3000								10% ⑤
C92	10000		CCD-103X	BPD-01	DD-103	BYA5S1	ED-01	DC511	5HK-S1	⑥
C93	1000		CCD-102X	BPD-001	DD-102	BYA5D1	ED-001	DC521	5HK-DI	⑥
C94	1000		CCD-102X	BPD-001	DD-102	BYA5D1	ED-001	DC521	5HK-DI	
C95	.047	600		P6S8N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C96	.047	600		P6S8N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C97	.047	600		P6S8N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	
C98	1000		CCD-102X	BPD-001	DD-102	BYA5D1	ED-1000	DC521	5HK-S1	
C99	1000		CCD-103X	BPD-001	DD-102	BYA5D1	ED-1000	DC521	5HK-S1	
C100	330			P3S8N-00033	DD-331	LUT33	ED-330	UC-5333	5GA-Q33	

① Some versions may use a 33MMF, 47MMF, or 68MMF in this application. Replace with original value.
② Not used in some versions.
③ A .08MFD @ 400V is used in Run 5.
④ Not used in Run 5.
⑤ Some versions use a 100MMF, 3000V, 10% in this application (Part #CO3781).
⑥ Some versions use a 1000MMF in this application.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	OLYMPIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1500Ω	½	PTK3774-1	F1-7	RTV-196	▪ QU-404	▪ UE1958	Picture
B	1Meg	½		R2-52	Not Req.			Volume
C	Switch			KB-1	Not Req.			
R2A	1.5Meg	½	PTK3816-1	B- 743	A47-1.5Meg-S	QU-138	U155	Brightness
B	Shaft			Not Req.	KB-3	Not Req.	Not Req.	
R3A	1.5Meg	½	PTK3816-1	B-743	A47-1.5Meg-S	QU-138	U155	Vert. Hold
B	Shaft			Not Req.	KB-3	Not Req.	Not Req.	
R4A	100K	½	PTK3817-1	B-40	A47-100K-S	QU-130	U41	Horiz. Hold
B	Shaft			Not Req.	KB-3	Not Req.	Not Req.	
R5A	3Meg	½	PT4328	B-84	A47-3Meg-S	QU-140	U59	Range
B	Shaft			Not Req.	KB-3	Not Req.	Not Req.	
C	Switch			KB-1	SWE-12	76-1	U5-28	
R6A	5000Ω	½	PTK3819-1	B2-10	A47-5000-S	BU-114	TA53L	Vert. Lin. - Note 1
B	Shaft			Not Req.	KB-3	TM3-K1t	Not Req.	
R7A	2.5Meg	½	PTK3908-1	BX-83	A47-2.5Meg-S	BU-139	TA356L	Height
B	Shaft			Not Req.	FKB-1/4	TM3-K1t	Not Req.	
R8	400Ω	2	PT3611		B9-500		FL-600	Buzz - Wire wound

Note 1. Alternate part #PTK3819-2.
▪ Concentrikit Equivalent, KB-KH, Base elements and Shafts, B1T-109, P1-109 (Panel)
B13-13T, R1-126 (Rear)
76-1 (Switch)
■ STA-LOC Equivalent FA152R, OF1312, RU16A, HH612, U8-41.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING: OHMS	RATING: WATT	OLYMPIC PART No.	NOTES
R9	470Ω			
R10	330Ω			
R11	330Ω			
R12	8200Ω			
R13	1Meg			
R14	750K 5%			
R15	10K			
R16	220K			
R17	2200Ω			
R18	15K			
R19	4700Ω			
R20	4700Ω	1		
R21	1Meg			
R22	330K			
R23	8200Ω			Note 1
R24	1000Ω			
R25	330Ω			
R26	47Ω			
R27	68000Ω			
R28	1000Ω			
R29	330Ω			
R30	47Ω			
R31	15K			
R32	330Ω			
R33	180Ω			
R34	3900Ω			
R35	56K	1		
R36	1Meg			
R37	56Ω			
R38	10K	2		Note 2
R39	10K	2		
R40	47K	2		
R41	68Ω			
R42	1500Ω			
R43	22K			
R44	330K			
R45	150K			
R46	10K			
R47	47K	1		Note 3
R48	47K			
R49	1000Ω			
R50	330K			
R51	47000	1		
R52	150Ω			
R53	1Meg			
R54	1Meg			
R55	700Ω	10	RE3958	
R56	1Meg			
R57	1Meg			
R58	1.5Meg			
R59	82K			
R60	2.2Meg			
R61	470K			
R62	33K			
R63	82K			
R64	100K			Note 4
R65	22K			
R66	56K	1		
R67	4700Ω			
R68	82K			
R69	680K			
R70	4.7Meg			
R71	4.7Meg			
R72	13K			
R73	1Meg	1		
R74	1.5Meg			
R75	1.5Meg			
R76	560Ω			
R77	3700Ω			
R78	560Ω			
R79	560Ω			
R80	330K			
R81	820K	1		
R82	3300Ω	1		
R83	47K	1		
R84	120K			
R85	82K 5%	1		
R86	3900Ω			

RESISTORS (cont)

ITEM No.	RATING: OHMS	RATING: WATT	OLYMPIC PART No.	NOTES
R87	150K 5%	1		
R88	820Ω			
R89	22K			
R90	180K			
R91	150K			
R92	47Ω			
R93	470K			
R94	5600Ω	2		
R95	5600Ω	2		Note 5
R96	3.3Ω	1		
R97	100K			

ITEM No.	RATING: OHMS	RATING: WATT	OLYMPIC PART No.	NOTES
R98	47K	1		
R99	33Ω			
R100	4700Ω			
R101	1000Ω	2		
R102	100K	1		
R103	100K	1		
R104	150K			
R105	3300			Note 6
R106	47K			
R107	100K	1		

Note 1. Some versions may use a 12K in this application.
Note 2. Some versions may use a 15K in this application.
Note 3. Some versions may use a 39000 in this application.
Note 4. Some versions may use a 150K in this application.
Note 5. Some versions may use a 6800Ω in this application.
Note 6. Not used in some versions

TRANSFORMER (POWER)

ITEM No	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: OLYMPIC PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC	570VCT	5V	6.3V	TR382-1		P-3077	P-8332 ②	26R90 ①	R-65BC
	@1.4A	@.220A	@3A	@6.5A						

① Parallel and phase 6.3V @ 8A and 6.3V @ 1.8A filament windings. Tape 6.3V @ 1.2A filament windings.
② Fabricate mounting. Parallel and phase 6.3V filament winding.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	OLYMPIC PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	Vert. Output	TR3689	Z1900①	A-3039 ② ③	V31A ② ③	A-8161 ② ③	26875 ①	A-103X ②	
T3A	Yoke-Horiz. (49MH (90°) -Vert. (40MH)	CL3600	DF807②	MDF-92 ④	Y80F16/43 ④	DY-18 ④	Y-16 ④	Y-41 & NW 3	
B	Alternate Yoke Horiz. Output	CL3600-3							
T4	Horiz. Output	TR3599-4	FB41 & RF800 *8	HVO-47 * 8	XO51 *	HO-3574 & WC-5 *6	FLY-16 & WC-22 * 8	WLC-5	
	Alt. Horiz. Output	TR3599-3	RF800⑤	MWC-6	20LR13	WC-8	WC-22	WLC-5	
T5	Width Coil (1.8 -0.3MH)	CL5402							

① Use 181 turn ratio.
② Drill new mounting hole(s).
③ Remove pin 1 of yoke socket from ground. Connect red lead to pin 7 of yoke socket and junction of C5, R101, and R7 .
④ Use original horizontal yoke damping network, if necessary.
⑤ Use terminals #3 and #4.
* This part may be superceded by Parts Manufacturer's introduction of special unit for this application.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

	ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
	9	9	9	9	12	9	
	8	8	8	8	11	7	
	6	8	8	6	2	7	
	3	See Note ⑥ NC	See Note ⑥ NC	4	6	See Note ⑥ NC	
	2	3	3	2	1	3	
	1	1	1	1	9	1	
Connect Width Coil Arms	1 & 2	Terms #1 & #2 of RF800 across 1 & 3	1 & 3	1 & 2	1 & 8	1 & 3	
Special Notes →		⑥ 7	⑧ ⑨	3	7 ⑩	⑥ 7	

⑥ Install new horizontal damping network, consisting of 1000Ω @ 1 watt resistor in series with capacitor (C91) across horizontal yoke terminals #3 and #7.
⑦ Remove resistor (R99) and capacitor (C88) from circuit.
⑧ Jumper terminals #7 and #9.
⑨ Jumper terminals #2 and #3.
⑩ Jumper terminals #1 and #7.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: OLYMPIC PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T6	2400Ω	3-4Ω	TR2786-1	Z1101	A-3035	A-3332	26858 ①	S-12X	① Drill new mounting hole.

SPEAKER

ITEM No.	TYPE: SIZE	TYPE: FIELD	TYPE: V. C. IMP	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: QUAM PART No.	NOTES
SP1	5"	PM	3-4Ω	SK-1788-3①	5A07	① Used in Models 1TD52, U
	5"	PM	11.7Ω	SK-3147-1②	5A15T	② Used in Models 1KD83, U, 4KH86, U, 4KH96, U
	8"	PM	3-4Ω	SK-3148-1③	8A023.2	③ Used in Models 1CD73, U, 1CD74, U
	8"	PM	3-4Ω	SK-1908-2④	8A31	④ Used in Models 1KD82, U
	4"	PM		SK-4343 ⑤		⑤ Used in Models 1KD81, U
	6"	PM		SK-5373 ⑥		
	6" x 9"	PM		SK-5378 ⑦		

OLYMPIC MODELS 1CD73, U, 1CD74, U, 1KD81, U, 1KD82, U, 1KD83, U, 1TD52, U, 4KH85, U, 4KH86, U (Ch. DD, DDU, DH, DHU, Runs 5 and 6)

FOLDER 2

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		OLYMPIC PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	47.25MC Trap	CL4753				
L2	RF Choke	CL1535	19-3036	TV-180	6176	36 Microhenries
L3	1st. Video IF	CL4806				Includes 41.25MC Trap
L4	Fil. Choke	CL2427	19-1001	BC-562	4604	1.5 Microhenries
L5	2nd. Video IF	CL4511	17-4522	TV-130	6219	
L6	Fil. Choke	CL2427	19-1001	BC-562	4604	1.5 Microhenries
L7	3rd. Video IF	CL4511	17-4523	TV-130	6219	
L8	47.25MC Trap	CL4753				
L9	4th. Video IF	CL4511	17-4523	TV-130	6219	
L10	Resonant Choke	CK4225				1.7 Microhenries
L11	Series Peaking Coil	CL1358	19-3180 *	TV-184 *	6180*	180 Microhenries, wound on 12K resistor
L12	Shunt Peaking Coil	CL1537	19-4180	TV-183	6179	180 Microhenries, wound on 39K resistor
L13A	4.5MC Trap	TR3386-1				
B	1st. Sound IF					
L14	Series Peaking Coil	CL3398	19-3250 ▲	TV-185 ▲	6181 ▲	250 Microhenries, wound on 15K resistor
L15	Shunt Peaking Coil	CL3403	19-3300 ♦	TV-199 ♦	6155 ♦	300 Microhenries, wound on 1Meg resistor
L16	2nd. Sound IF	CL4021				
L17	Quadrature Coil	CL3603-1			1481	
L18	RF Choke	CK4415	19-1004	BC-565	4610	6.8 Microhenries, IRC Part #CL-1

* Parallel 12K resistor. ▲ Parallel 15K resistor. ♦ Parallel 1Meg resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA						NOTES
	PRI.	SEC.	OLYMPIC PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	
L19	21Ω	50Ω	TR2294	20-1402	TV-162	6183	H-100	HS-3	Horiz. Waveform coil 45Ω

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	OLYMPIC PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L20	.220A	62Ω	.7 HY.	CK4047	C5030 ①		C-2327 ①	26C43 ①	C-24X ①

① Drill new mounting hole.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	OLYMPIC PART No.	REPLACEMENT DATA	
K1	Vert. Integrator	2000MMF, 5000MMF, 5000MMF, 22K, 8200Ω, 8200Ω	PC2435	Aerovox Centralab Cornell-Dubilier Erie Sprague	PA-110 PC-100 115TM1 1405-01 V-1

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			OLYMPIC PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	C	3/8A 250V	FU3958	FH3852	332.375 (C 3/8A 250V)	346002	C 3/8	HC 3/10 to 1/2

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		OLYMPIC PART No.	CBS PART No.	SYLVANIA PART No.	
M2	1N64 *		1N60	1N60	Video Detector (Pigtail)

* A 1N60 may be used in some versions.

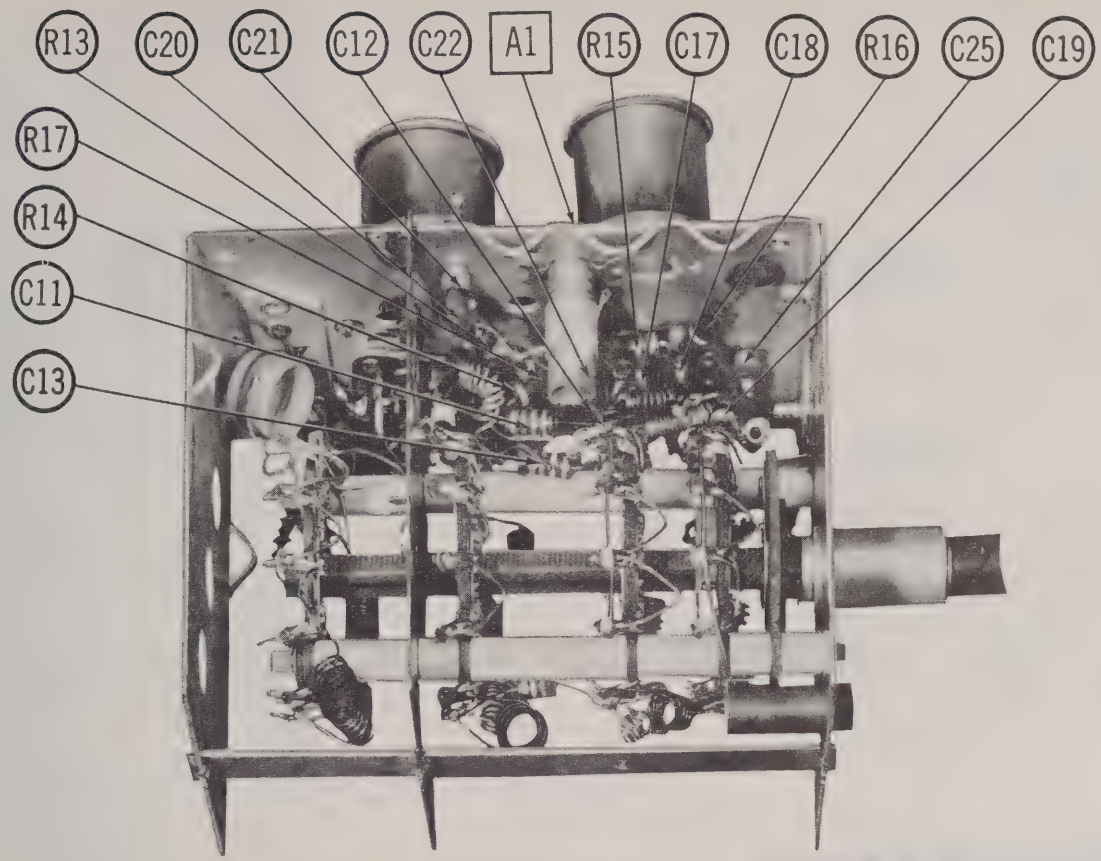
MISCELLANEOUS

ITEM No.	PART NAME	OLYMPIC PART No.	NOTES
M3	Pilot Lamp	BU187	#47
M4	Tuner	CL4756	VHF, Ch. DD, DH
	Tuner	CL4747	UHF-VHF, Ch. DDU, DHU
M5	Switch		Local-Distant (Slide Type DPDT)
M6	Magnet	PP-4418	Focus and centering device
M7	Ion Trap	PP-2248	

CABINETS & CABINET PARTS

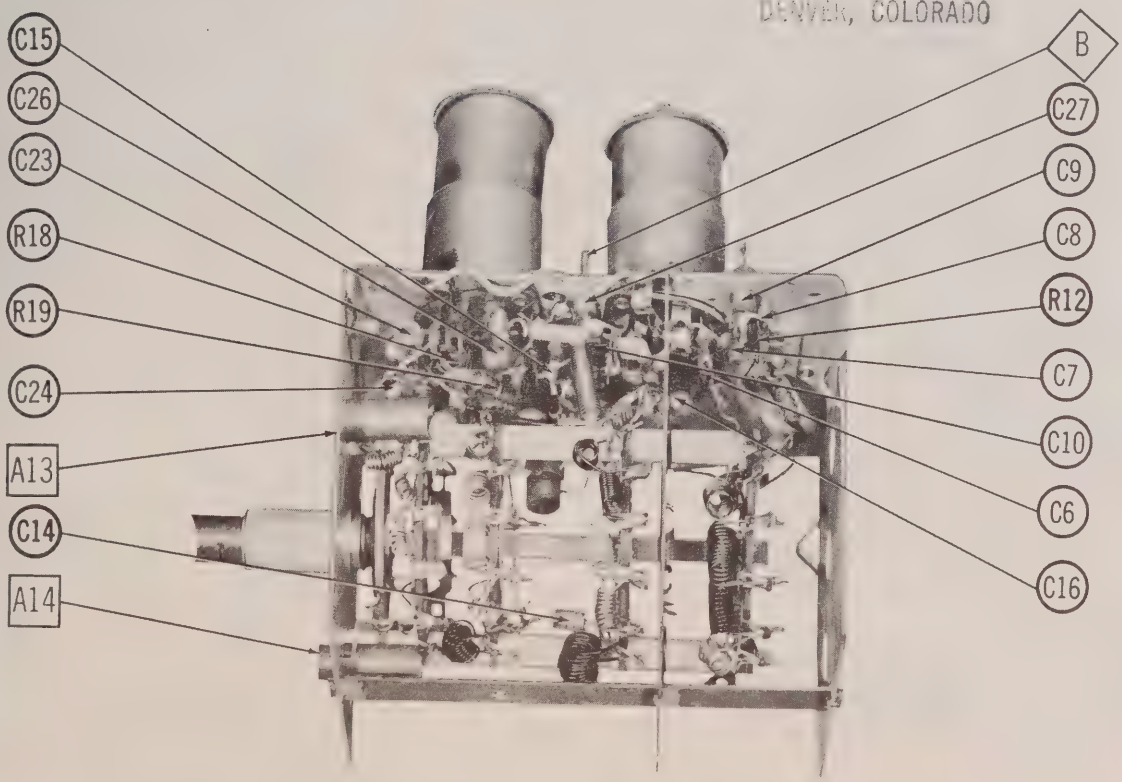
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	PP3656-1	21" Models
Safety Glass	PP3939-1	24" Models
Mask	PP3938	
Escutcheon	ES4308-1	21" Models
Escutcheon	ES4308-2	24" Models



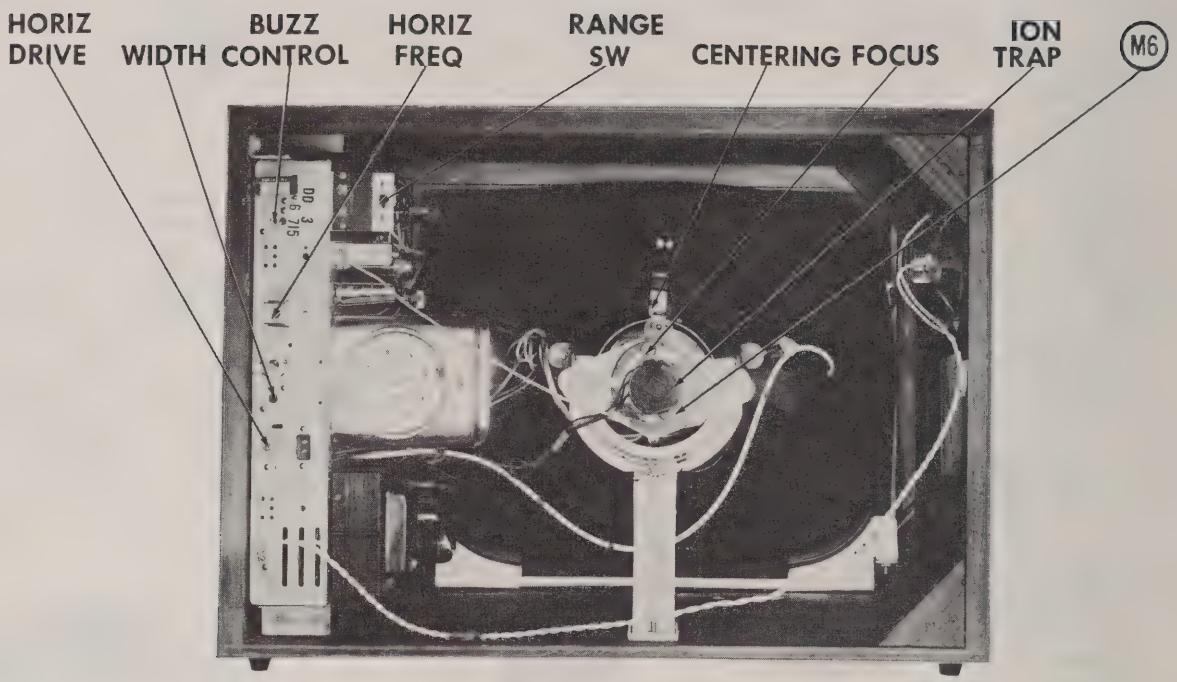
RF TUNER-LEFT SIDE

DENVER, COLORADO



RF TUNER-RIGHT SIDE

FOLDER 2



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern. Connect a short jumper across terminals "C" and "D" of the horizontal oscillator transformer (L19).

Set the horizontal hold control fully clockwise. Adjust horizontal frequency slug (B1) until the picture synchronizes horizontally. Remove the jumper from L19. Connect the vertical amplifier of the scope thru a low capacity probe to terminal "C" of L19. Low side to chassis. Adjust the horizontal waveform slug (B2) for a waveform similar to Fig. 5 with the broad and narrow peaks of equal amplitudes. If necessary during the alignment of B2, keep the picture in sync with the horizontal hold control or B1. Remove the scope and retouch B1 for the following conditions:

1. At full clockwise position of the horizontal hold control, a blanking bar or horizontal jitter should be evident.
2. At full counter clockwise position of the horizontal hold control, the picture should lose sync with $4\frac{1}{2}$ to 5 diagonal bars slanting down to the left. If the picture remains in sync at either extreme setting of the horizontal hold control, switch off channel and back again so that the picture will fall out of sync.

Adjust the horizontal drive trimmer (B3) counter clockwise as far as possible without the presence of vertical white lines or compression near the center of the raster.

Adjust width slug (B4) for a picture SLIGHTLY wider than necessary to fill the picture mask horizontally.

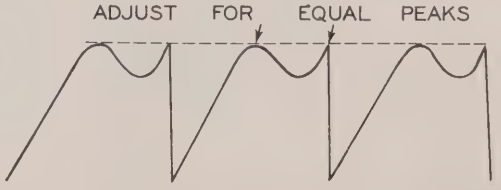
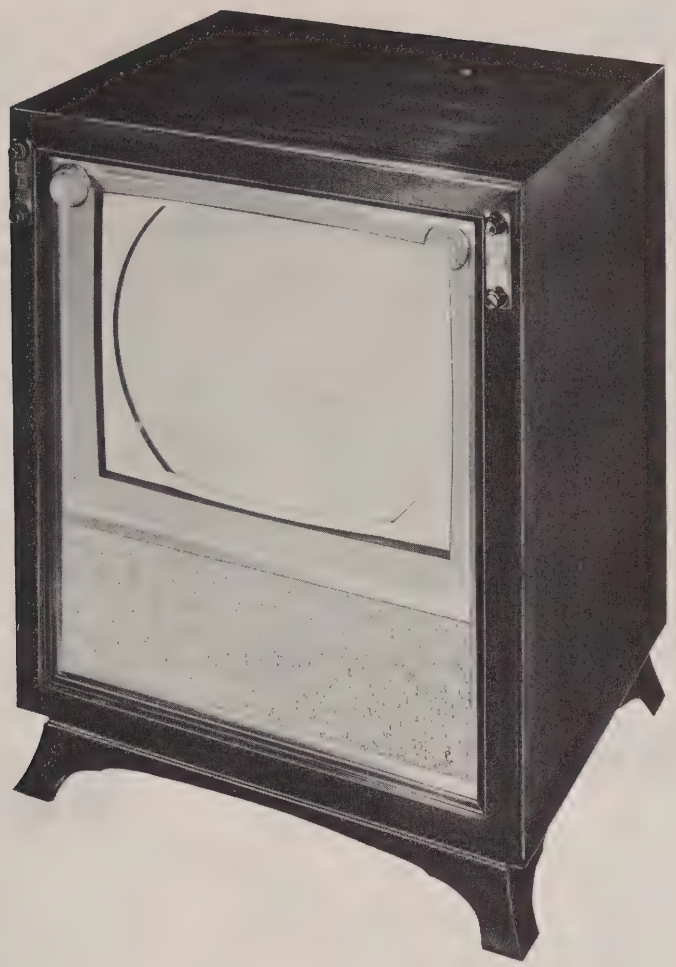


FIG. 5

PHOTOFACT* Folder

*TRADE MARK

TRUETONE
MODELS 2D1728, 2D1729



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3924 MEADE ST.
DENVER, COLORADO

TRUETONE
MODELS 2D1728, 2D1729

TRADE NAME	Truetone Models 2D1728, 2D1729
SUPPLIER	Western Auto Supply Co., 2107 Grand Avenue, Kansas City, Mo.
TYPE SET	Color Television Receiver
TUBES	Twenty-seven
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING 350 Watts, 4 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

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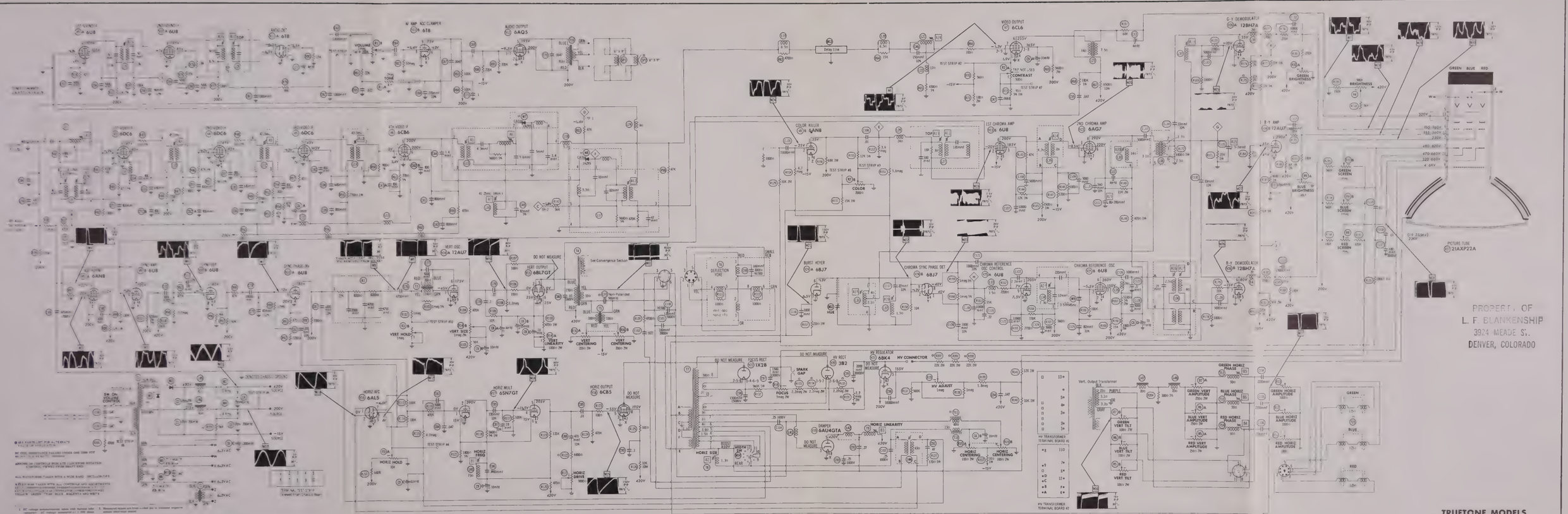
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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3924 MEADE St.
DENVER, COLORADO
TRUETONE MODELS
2D1728, 2D1729

BLOCK DIAGRAM

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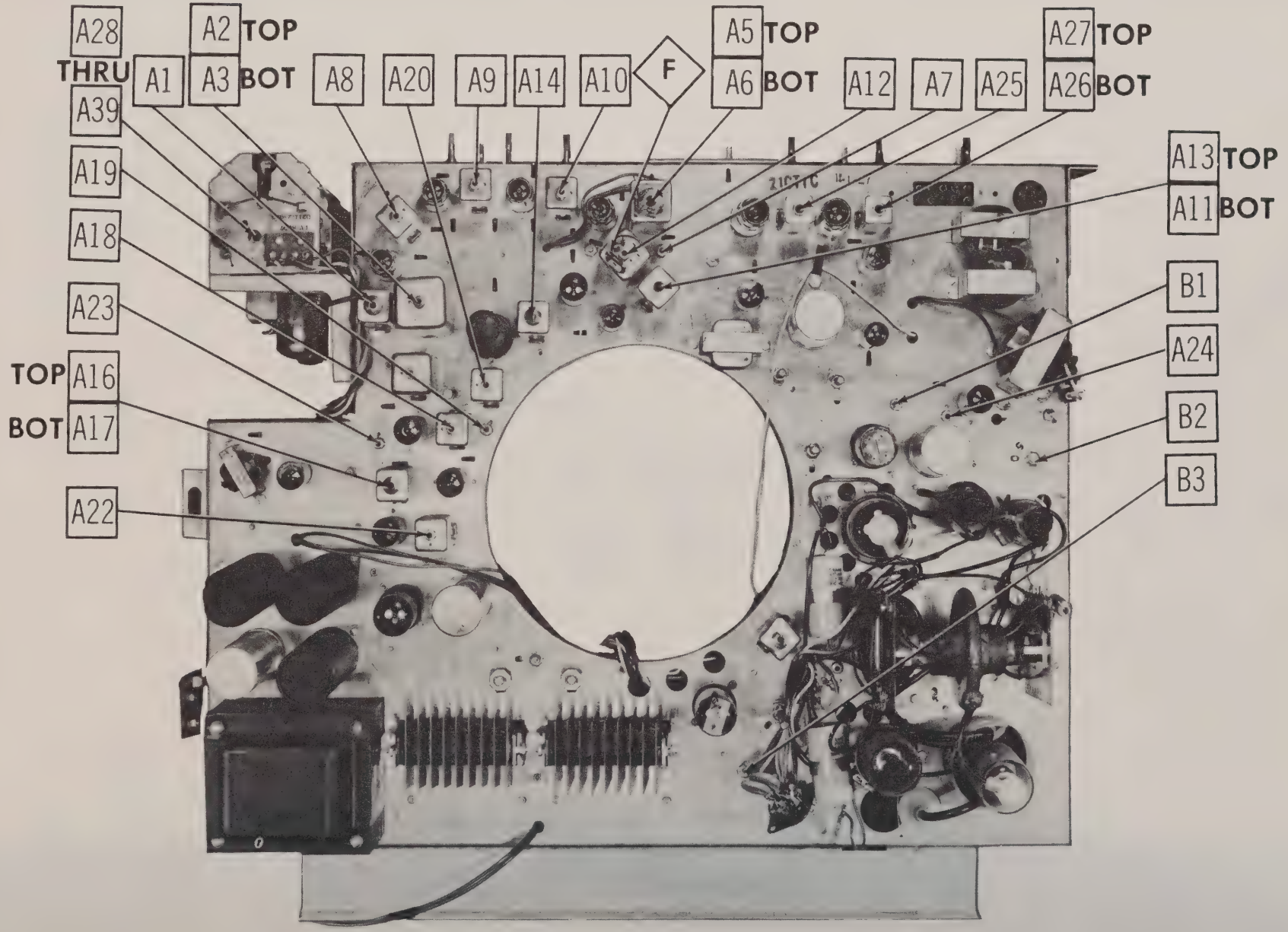

CHASSIS TOP VIEW ALIGNMENT IDENTIFICATION

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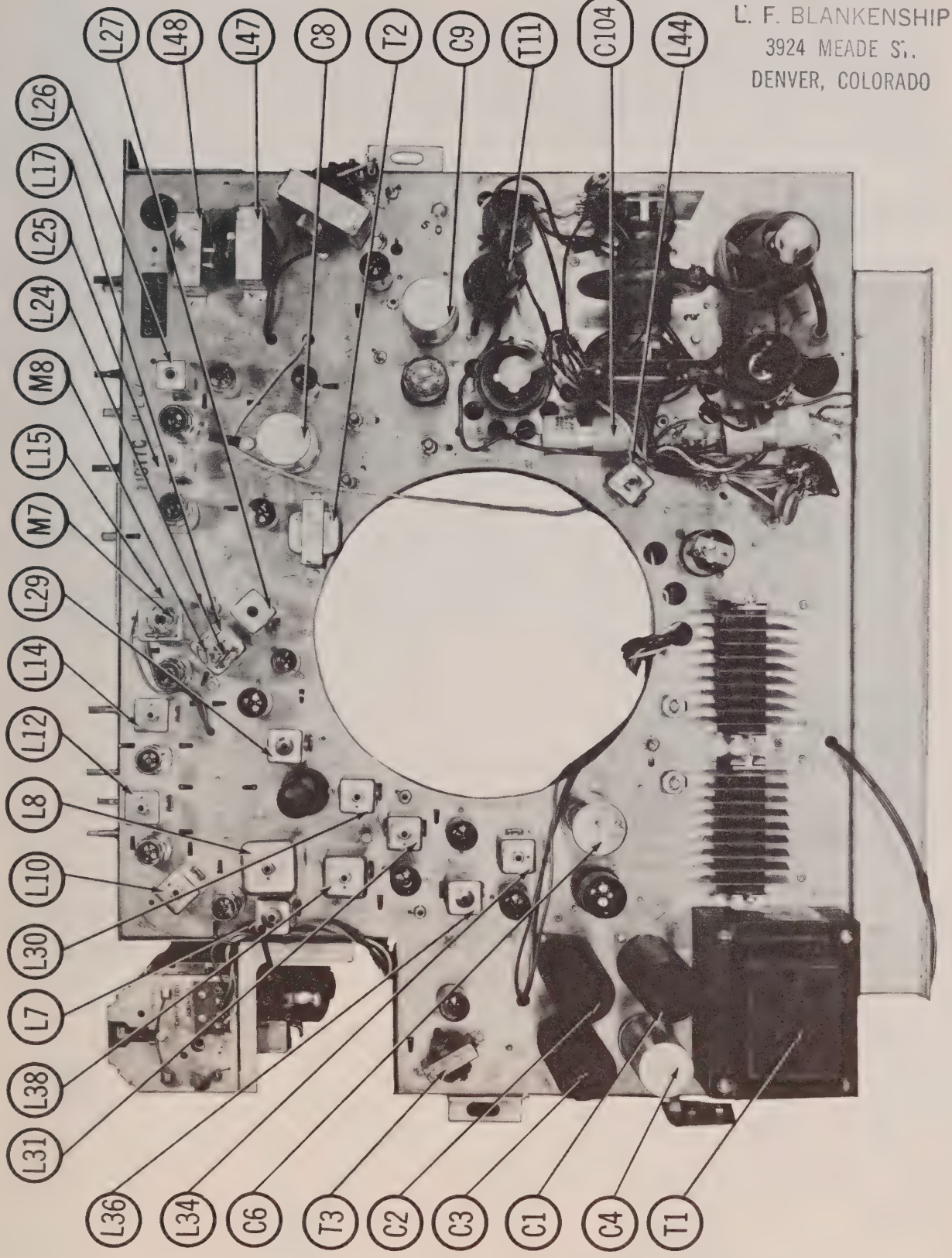


CHASSIS TOP VIEW

TRUETONE MODELS
2D1728, 2D1729

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

To eliminate interference to the response curves during alignment, disable the high voltage circuit by removing the damper tube (V19).
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Connect the negative lead of a 4.5 volt bias supply to point (A). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to point (B) (thru hole in top of tuner). Low side to chassis.	44.5MC	41.25MC	10	Vert. Amp. thru detector probe to pin 5 (plate) of 6DC6 (V3). Low side to chassis.	A1, A2, A3, A4	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Correct settings for A2 and A3 are with slugs farthest clockwise when adjusting both from top.
2.	1500MMF	High side to pin 1 (grid) of 6CB6 (V6). Low side to chassis.	"	41.7MC 42.17MC 42.7MC 45.75MC	"	Vert. Amp. thru 10K to point (C). Low side to chassis.	A5, A6, A7	Adjust for maximum gain and symmetry of response similar to Fig. 2 with markers as shown. Start adjustment with slugs A5 and A6 at the outer most ends of coil forms and A7 nearest chassis.
3.	"	"	"	41.25MC 42.7MC 45.75MC	"	Vert. Amp. thru 10K to point (D). Low side to chassis.		Check for response curve similar to Fig. 3. If necessary, retouch A5, A6 and A7 for desired response. Repeat steps 2 and 3 until best curves are obtained similar to Fig. 2 and Fig. 3. Repeat step 1.
4.	"	High side to point (B). Low side to chassis.	Not used	45.0MC (Unmod)	"	USE VTVM. DC probe thru 10K to point (D). Low side to chassis.	A8	Adjust for maximum deflection.
5.	"	"	"	41.5MC	"	"	A9	"
6.	"	"	"	43.5MC	"	"	A10	"
7.	"	"	"	41.25MC	"	"	A2, A7	Adjust for MINIMUM deflection.
8.	"	"	"	47.25MC	"	"	A3	"
9.	"	"	44MC	42.17MC 42.7MC 44.75MC 45.75MC	"	Vert. Amp. thru 10K to point (D). Low side to chassis.		Check for response curve similar to Fig. 4. Check next step.
10.	"	"	"	41.25MC 42.7MC 42.17MC 42.7MC 44.75MC 45.75MC	"	Vert. Amp. thru 10K to point (C). Low side to chassis.		Check for response curve similar to Fig. 5. If necessary, retouch A7, A8 and A9 while switching scope connection between point (C) and point (D) until desired response is obtained in both positions.

CHROMA BANDPASS ALIGNMENT

Turn the brightness control fully counter clockwise.
Remove the chroma reference tube (V25) from its socket.
Disconnect one end of the chroma detector crystal (M8).
Connect the negative lead of a 16 volt bias supply to point (E). Positive to chassis.
Connect a 1MMF capacitor in series with the detector probe in the following steps.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	3300Ω Carbon Resistor	High side to point (F). Low side to chassis.	Not used	4.5MC (400∿ 30% AM Mod)	Any non-interfering channel	Vert. Amp. thru a detector probe to point (G). Low side to chassis.	A11, A12	Adjust for MINIMUM deflection.
12.	"	"	"	4.1MC	"	"	A13	Adjust for maximum deflection.
13.	"	"	"	3.1MC	"	"	A14	"
14.	"	"	3.58MC (2MC Swp)	3.1MC 4.1MC 4.5MC	"	"	A15	Adjust for symmetrical response similar to Fig. 6 with markers as indicated.

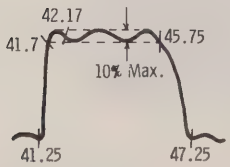


FIG. 1

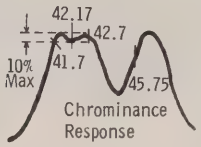


FIG. 2

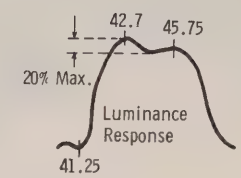


FIG. 3

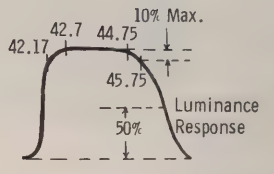


FIG. 4

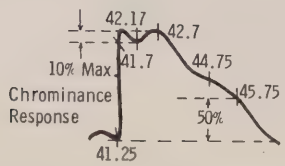


FIG. 5

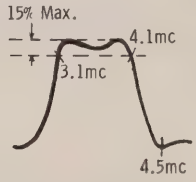


FIG. 6

ALIGNMENT INSTRUCTIONS (cont)

CHROMA REFERENCE OSCILLATOR ALIGNMENT

1. Set the color control to the center of its range.
2. Set the vertical and horizontal hold controls for correct frequency.
3. Turn brightness and contrast controls fully counter clockwise.
4. Remove the lst. chroma amplifier tube (V13) from its socket.
5. Connect the DC probe of a VTVM to pin 7 (grid) of the 12BH7 (V26). Connect common to chassis. Set the VTVM to -30 volt scale.
6. Adjust A16 and A17 for maximum deflection.
7. Remove the VTVM connection and connect the vertical amplifier lead of a wide band scope thru a low capacity probe to pin 6 (plate) of the 6BJ7 (V24). Low side to chassis.
8. Adjust the "Hue" and A18 for maximum apparent burst on the scope.
9. Adjust A19, A20 and A21 for MINIMUM apparent burst on the scope.
10. Replace the lst. chroma amplifier tube (V13) and reconnect the chroma detector crystal (M8).
11. Connect a color bar generator to the antenna terminals and adjust the fine tuning for the proper picture.
12. Remove the scope and connect the DC probe of the VTVM to point ⟨E⟩. Common to chassis.
13. Set the "Hue" to 50% mesh.
14. Adjust A18 for maximum negative voltage on the VTVM.
15. Move the DC probe of the VTVM from point ⟨E⟩ to point ⟨H⟩.
16. Adjust A22 for zero voltage.
17. Remove the VTVM connection and connect the vertical amplifier of the scope to point ⟨J⟩. Low side to chassis.
18. Adjust A18 for correct R-Y response for the color bar generator being used. (See Fig. 7).
19. Move scope connection to point ⟨K⟩.
20. Adjust A23 for correct G-Y response for the color bar generator being used.

3.58 MC TRAP ADJUSTMENT

1. Connect a color bar generator to the antenna terminals and adjust the fine tuning for the proper picture.
2. Connect the vertical amplifier lead of a wide band scope thru a low capacity probe to pin 6 (plate) of the 6CL6 (video output, V7). Low side to chassis.
3. Adjust A24 for MINIMUM sub-carrier response.

SOUND IF ALIGNMENT

Tune in a monochrome signal and adjust the fine tuning for best picture.
Connect the DC probe of a VTVM to point ⟨L⟩. Common to chassis.
Adjust A25 for maximum deflection.
Move the DC probe from point ⟨L⟩ to pin 2 (plate) of the 6T8 (V11).
Adjust A26 and A27 for maximum deflection. A27 will be found to have a broad peak,so adjust very carefully to highest peak.

TUNER OSCILLATOR ALIGNMENT

Connect bias as under "Video IF Alignment".
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
15.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K to point ⟨D⟩. Low side to chassis.	A28	Adjust to place sound marker in trap notch as in Fig. 8. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A29	
			201MC	199.25MC 203.75MC	11		A30	
			195MC	193.25MC 197.75MC	10		A31	
			189MC	187.25MC 191.75MC	9		A32	
			183MC	181.25MC 185.75MC	8		A33	
			177MC	175.25MC 179.75MC	7		A34	
			85MC	83.25MC 87.75MC	6		A35	
			79MC	77.25MC 81.75MC	5		A36	
			69MC	67.25MC 71.75MC	4		A37	
			63MC	61.25MC 65.75MC	3		A38	
			57MC	55.25MC 59.75MC	2		A39	

RF AND MIXER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

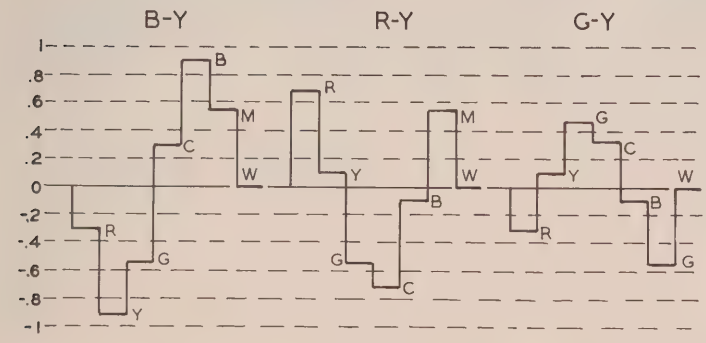


FIG. 7

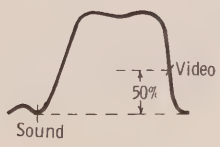


FIG. 8

MISCELLANEOUS ADJUSTMENTS

HORIZONTAL SWEEP CIRCUIT ADJUSTMENT

Turn the set on and tune in a monochrome signal. Adjust front controls for a normal picture. Set the horizontal hold control to the center of its range. Adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally. Set B1 to the center of the range in which the picture remains in sync.

Adjust horizontal size switch and horizontal size plug (B2) for a picture SLIGHTLY wider than necessary to fill the picture mask horizontally.

Connect the DC probe of a VTVM to pin 8 (grid) of 6CB5 (V18). Connect common to chassis. Adjust horizontal linearity slug (B3) for MINIMUM voltage. Rotate the horizontal drive control (R17) until drive lines (white vertical line or lines) disappear.

Turn the brightness control down until the picture is just visible. Connect the high voltage probe to the plate cap of the high voltage regulator tube (V21) and adjust the high voltage adj. control (R19) for 25 KV.

PRELIMINARY ADJUSTMENTS

Check adjustment of horizontal and vertical centering, focus, vertical linearity and vertical size controls.

Check position and location of the blue beam positioning magnet. (The magnet should be directly centered on the flags of the blue gun of the picture tube).

Check position and location of the purity magnet. (The purity magnet should be centered directly over the break in the gun structure, which is located SLIGHTLY forward of the blue beam positioning magnet).

Check the position and location of the convergence yoke assembly. (The assembly should be located approximately 1/4" back from the deflection yoke, and positioned so that the blue convergence coil is directly over the blue gun. (This coil may be identified by means of a colored lead.)

INITIAL CONVERGENCE ADJUSTMENT

Convergence must be set in the center area of the picture tube before attempting purity adjustments.

Adjust the brightness, blue and green brightness, and red, blue and green screen controls to produce an apparent black and white picture. If necessary, readjust the focus control.

Set the red, blue and green horizontal and vertical convergence amplitude controls fully counter clockwise. Set red, blue and green vertical convergence tilt controls to the center of their range.

Connect a dot generator to the antenna terminals and tune them in on the receiver. Check the contrast control setting.

Adjust the red, blue and green convergence magnets (part of the convergence yoke assembly) and the blue beam positioning magnet to produce good convergence in the center of the screen.

Remove the dot generator.

PURITY ADJUSTMENTS

1. Turn the brightness and contrast controls fully counter clockwise.
2. Turn blue and green brightness controls and blue and green screen controls fully counter clockwise.
3. Turn the channel selector to an unused channel.
4. Advance the red screen control fully clockwise.
5. Turn the brightness control slowly clockwise until a raster appears.
6. Pull all field equalizing magnets (edge magnets) to their maximum outward position. (There are three magnets on each side of the picture tube.
7. Adjust the purity magnets for MINIMUM effect which is when the two red tabs are together.
8. Adjust the purity magnet for best red field by rotating either or both tabs around the neck of the picture tube.
9. Loosen yoke positioning bolts and move the yoke backward and forward until the position is found that produces the maximum red over the entire face of the picture tube.

NOTE: It may be necessary to repeat steps 8 and 9 until optimum results are obtained.

10. Check for pure blue field by turning the red screen control fully counter clockwise and advancing the blue screen and blue brightness controls fully clockwise. Readjust the brightness control for a sufficient blue raster.
11. Check for a pure green field by turning the blue screen and the blue brightness controls fully counter clockwise and advancing the green screen and the green brightness controls fully clockwise. Readjust the brightness control for sufficient green raster.

NOTE: It may be necessary to repeat steps 8 and 9 while compromising on purity of red, blue and green raster so that a good average will be obtained on all fields. Good judgement will be matter of experience when purity is concerned. Any correction on one field effects the other two, therefore, each field must be check if either the yoke or the purity magnets are changed.

12. Adjust the red, blue and green screen and blue and green brightness controls to produce a white raster with a low brightness level. If color contamination is visible at the edge of the screen, adjust the field equalizing magnets nearest the area of contamination to produce the most uniform white field over the entire screen.

VERTICAL CONVERGENCE

Connect a dot generator to the antenna terminals and tune in the dot pattern on the receiver. Set the brightness and contrast controls for a suitable dot pattern.

Adjust the red, blue and green convergence magnets and the blue beam positioning magnet to provide good convergence in the center of the screen.

As an aid to performing the vertical convergence adjustments, it is advisable to block off all but one center vertical row of dots with cardboard or some other material.

Turn the blue brightness and blue screen controls fully counter clockwise.

Adjust the red screen, green screen and green brightness controls for equal size red and green dots.

Adjust the green and red vertical amplitude and tilt controls until the red and green dots are equally spaced from each other in the same direction.

Adjust the red and green convergence magnets to overlap the red and green dots to obtain yellow dots.

If necessary, readjust the red and green vertical amplitude and tilt controls until the dots overlap evenly from one end of the vertical center row to the other, thereby producing a vertical row of yellow dots.

Turn the green screen and green brightness controls fully counter clockwise.

Advance the blue screen and blue brightness controls until blue dots appear equal in size to the red dots.

Adjust the blue vertical amplitude and tilt controls until the blue dots are equally spaced in the same direction from the red dots.

Adjust the blue convergence magnet and the blue beam positioning magnet until the blue dots overlap the red dots, thereby producing magenta dots.

Readjust the blue vertical amplitude and tilt controls until all the dots in the center vertical row are magenta and no evidence of red or blue is visible.

Turn the red screen control fully counter clockwise. Advance the green screen and green brightness controls until the green dots are the same size as the blue dots.

Adjust the green vertical amplitude and tilt controls until green dots overlap the blue dots, thereby producing cyan dots. If necessary, readjust the green convergence magnet.

Advance the red screen control until white dots are observed.

Readjust the red, blue and green vertical amplitude and tilt controls as well as the red, blue and green convergence magnets, if necessary, until only white dots appear and there is no color fringing visible.

HORIZONTAL CONVERGENCE

If a covering was used in the above steps to show only a vertical row of dots, rearrange so that only the center horizontal row of dots are visible.

Turn blue screen and blue brightness controls fully counter clockwise.

Adjust green and red horizontal amplitude controls, red horizontal phase slug (B4) and the green horizontal phase (B5) until the red and green dots are equally spaced from each other in the same direction.

Adjust the red and green convergence magnets until the red and green dots coincide to produce yellow dots.

Readjust if necessary, red and green horizontal amplitude controls and phase slugs until the dots overlap evenly and only yellow dots are visible.

Turn the green screen and green brightness control fully counter clockwise.

Advance the blue screen and blue brightness controls until the blue dots reappear equal in size to the red dots.

Adjust the blue horizontal amplitude control and the blue horizontal phase slug (B6) until the blue dots are equally spaced in the same direction from the red dots.

Adjust the blue convergence and the blue beam positioning magnets until the blue and red dots coincide to form magenta dots.

Readjust the red and blue horizontal amplitude controls and phase slugs until all the dots are magenta in color with no evidence of red or blue visible.

Turn the red screen control fully counter clockwise. Advance the green screen and the green brightness controls until the green dots appear equal in size to the blue dots.

Adjust the green horizontal amplitude control and the green horizontal phase slug until the green dots overlap the blue dots, thereby producing cyan dots.

Readjust the green convergence magnet, if necessary.

Advance the red screen control until the dots appear white.

Readjust red, blue and green horizontal amplitude controls and phase slugs as well as the red, blue and green convergence magnets, if necessary, until only white dots appear and there is no visible color fringing of any of the dots.

Observe the entire face of the picture tube and make any convergence touch-up adjustments necessary to produce white dots over the entire screen.

BLACK AND WHITE ADJUSTMENTS (GRAY SCALE ADJUSTMENTS)

1. Set the contrast control at approximately one-third of its rotation. Turn the brightness control fully clockwise. Turn the channel selector to an active monochrome channel.
2. Adjust the blue and green brightness controls for a satisfactory black and white picture.
3. Reduce the brightness control to the lowest usable level.
4. Adjust the red, blue and green screen controls for a black and white picture.
5. Turn the brightness control fully clockwise and repeat step 2.
6. Rotate the brightness control from maximum to minimum and check the black and white picture. If a color change is observed in the picture, repeat the above procedure until a black and white picture is obtained at all settings of the brightness control.

CHASSIS BOTTOM VIEW-TRANS., INDUCTOR AND ALIGNMENT IDENTIFICATION

TRUETONE MODELS
2D1728, 2D1729

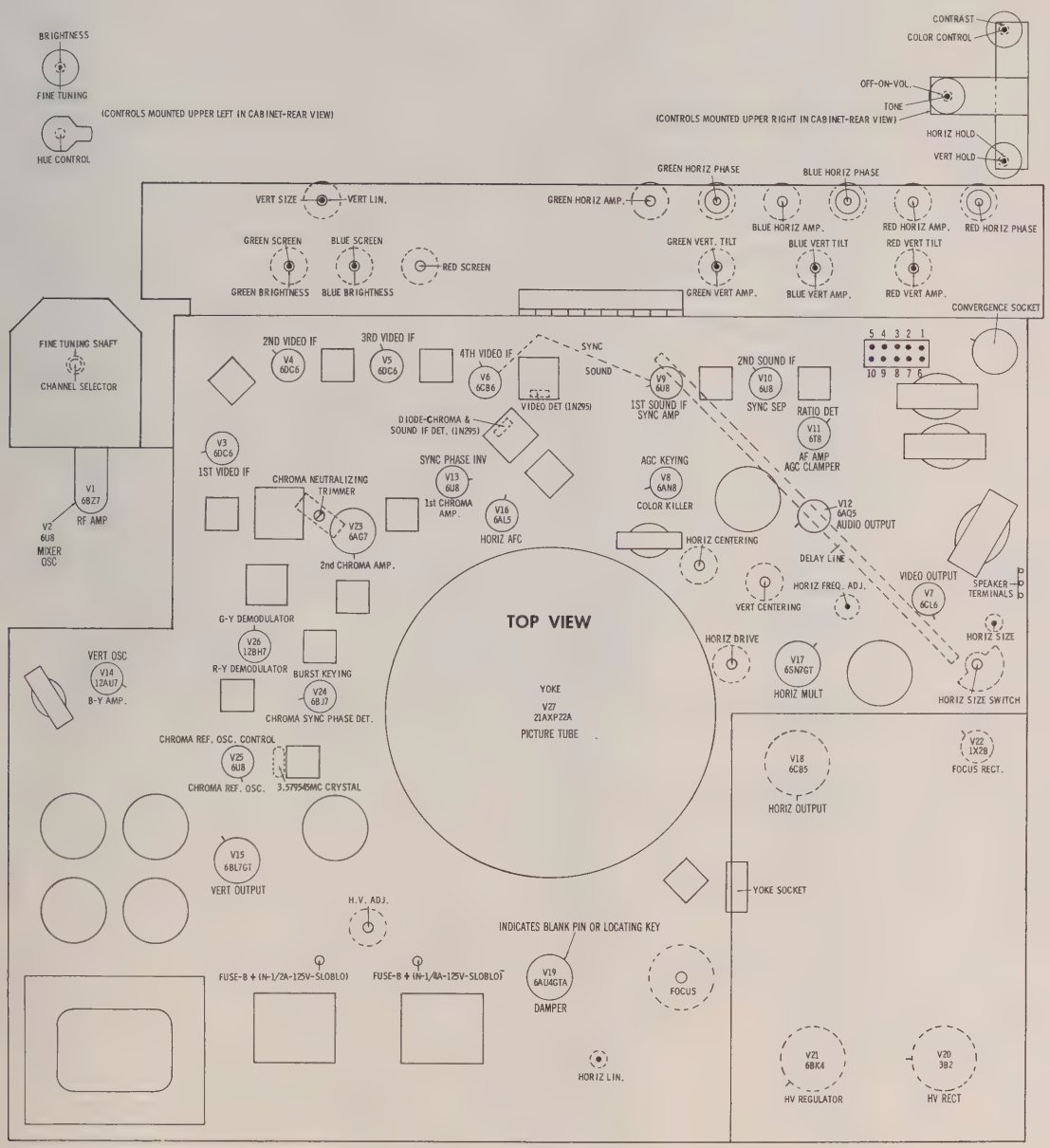
RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ7	§ 470Ω	300K	INF	0Ω	.1Ω	INF	1.5Meg	22Ω	0Ω
V2	6U8	§ 10K	200K	§ 108K	.1Ω	0Ω	§ 8200Ω	0Ω	0Ω	10K
V3	6DC6	75K	47Ω	.1Ω	0Ω	§ 2700Ω	§ 2700Ω	0Ω		
V4	6DC6	75K	56Ω	.1Ω	0Ω	§ 2800Ω	§ 2800Ω	0Ω		
V5	6DC6	35K	47Ω	.1Ω	0Ω	§ 2900Ω	§ 2900Ω	0Ω		
V6	6CB6	.1Ω	330Ω	.1Ω	0Ω	§ 800Ω	§ 800Ω	0Ω		
V7	6CL6	• 180Ω	4400Ω	§ 5600Ω	.1Ω	0Ω	† 6500Ω	0Ω	§ 5600Ω	4400Ω
V8	6AN8	§ 32K	14Meg	▲ 0Ω	INF	INF	500K	† 10K	§ 40K	§ 0Ω
V9	6U8	§ 7300Ω	470K	§ 10K	.1Ω	0Ω	§ 10K	82Ω	0Ω	40K
V10	6U8	§ 35K	100K	§ 12K	.1Ω	0Ω	§ 1000Ω	0Ω	0Ω	3.2Meg
V11	6T8	INF	15K	INF	0Ω	.1Ω	1.5Meg	0Ω	10Meg	§ 200K
V12	6AQ5	120K	0Ω	.1Ω	0Ω	§ 310Ω	§ 0Ω	120K		
V13	6U8	§ 3300Ω	3.5Meg	§ 13K	0Ω	.1Ω	§ 1500Ω	▲ 0Ω	2700Ω	1Meg
V14	12AU7	† 16K	16K	5600Ω	0Ω	0Ω	• † 870K	• 1.2Meg	0Ω	.1Ω
V15	6BL7GT	2.2Meg	† 230Ω	•600Ω	2.2Meg	† 230Ω	• 600Ω	0Ω	.1Ω	
V16	6AL5	• 45Ω	• 45Ω	.1Ω	0Ω	4.8Meg	TP	4.8Meg		
V17	6SN7GT	5.2Meg	† 6100Ω	1800Ω	100K	† 120K	1800Ω	.1Ω	0Ω	
V18	6CB5	NC	0Ω	0Ω	NC	470K	NC	.1Ω	† 10K	TOP CAP ‡5.5Ω
V19	6AU4GTA	NC	NC	¶	NC	† 3.5Ω	NC	0Ω	.1Ω	
V20	3B2	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ‡500Ω
V21	6BK4	§ 0Ω	0Ω	NC	NC	• † 450K	NC	.1Ω	NC	TOP CAP INF
V22	1X2B	15Meg	15Meg	NC	15Meg	15Meg	15Meg	NC	15Meg	15Meg
V23	6AG7	0Ω	.1Ω	NC	500Ω	0Ω	† 18K	0Ω	† 3800Ω	
V24	6BJ7	11Meg	4.4Ω	0Ω	.1Ω	0Ω	4.4Ω	220Ω	10Meg	4.4Ω
V25	6U8	§ 600Ω	100K	§ 15K	.1Ω	0Ω	† 8500Ω	0Ω	2700Ω	10Meg
V26	12BH7A	§ 13K	2.2Ω	0Ω	.1Ω	.1Ω	§ 13K	11K	0Ω	0Ω
V27	21AXP22A	§ 56K	† 150K	• 530K	• † 55K	• † 55K	• 150K	• § 530K	NC	• 11Meg
		PIN 10 NC	PIN 11 • § 480K	PIN 12 • 170K	PIN 13 • † 55K	PIN 14 §56K				

† MEASURED FROM 420V SOURCE.
‡ MEASURED FROM PIN 3 OF V19.
§ MEASURED FROM 200V SOURCE.
▲ MEASURED FROM -15V SOURCE.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
¶ THIS READING CAN VARY GREATLY, (10K MINIMUM), DUE TO THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
NC NO CONNECTION.
TP TIE POINT.

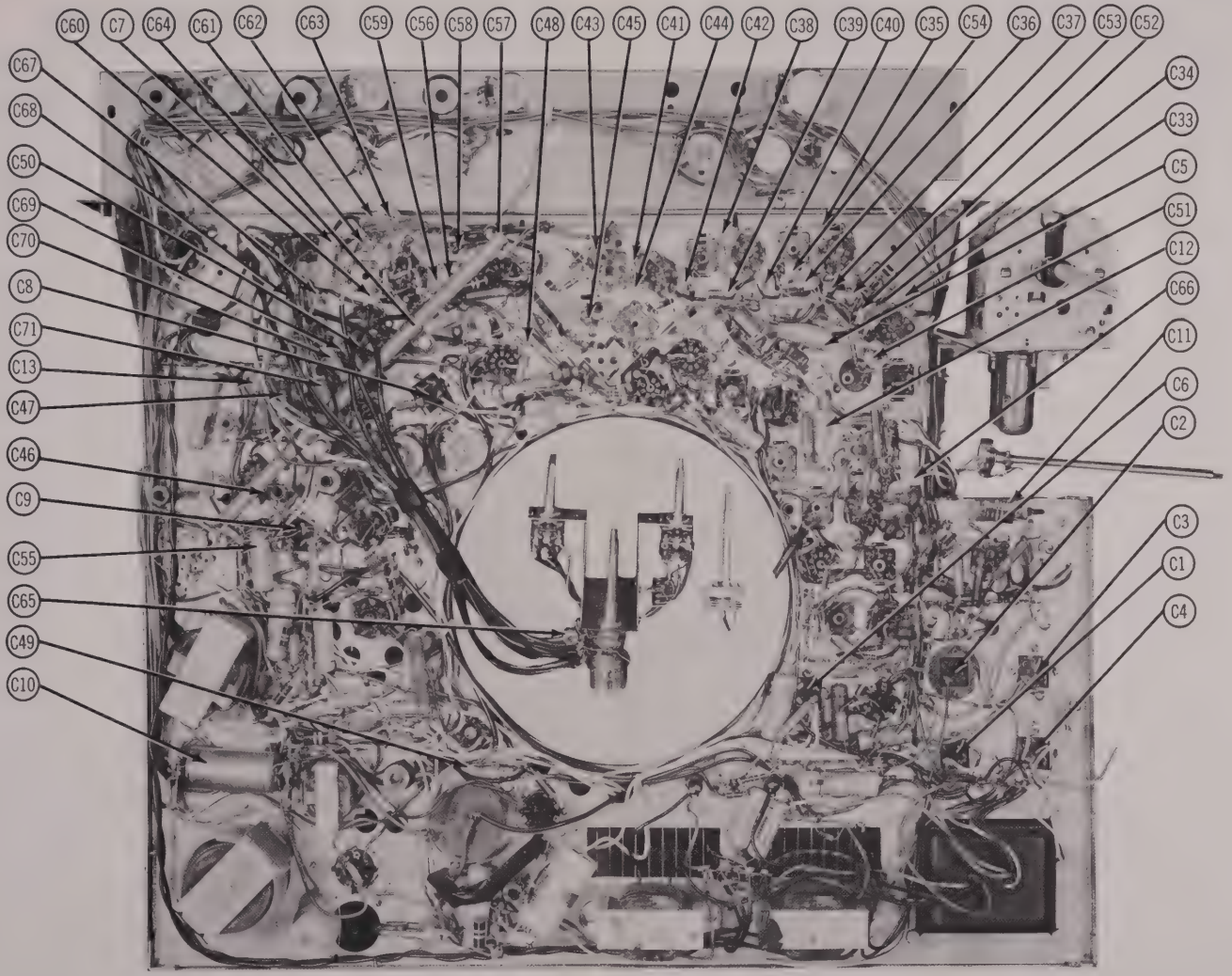
TUBE PLACEMENT CHART

3924 MEADE ST.
DENVER, COLORADO

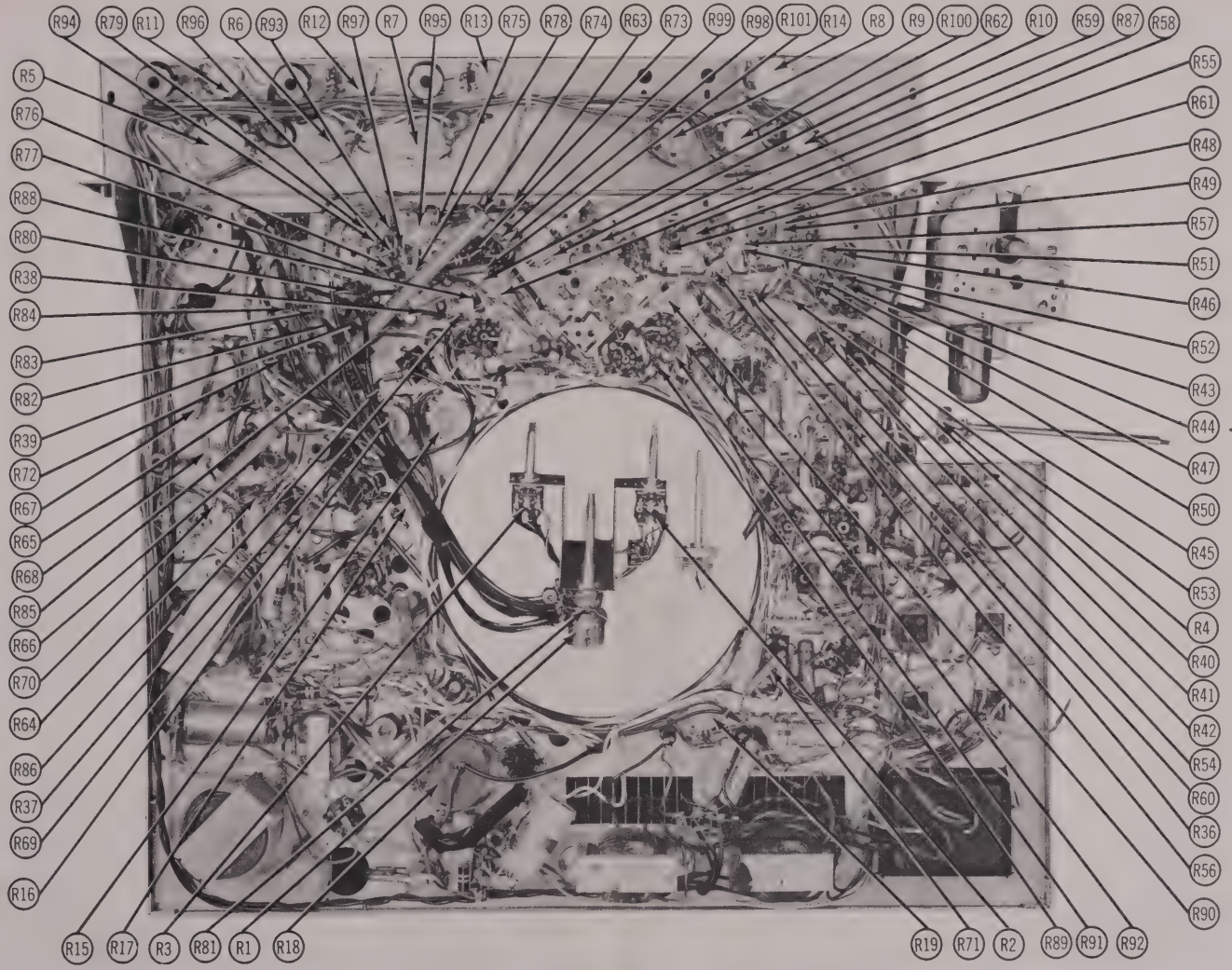


TRUETONE MODELS
2D1728, 2D1729

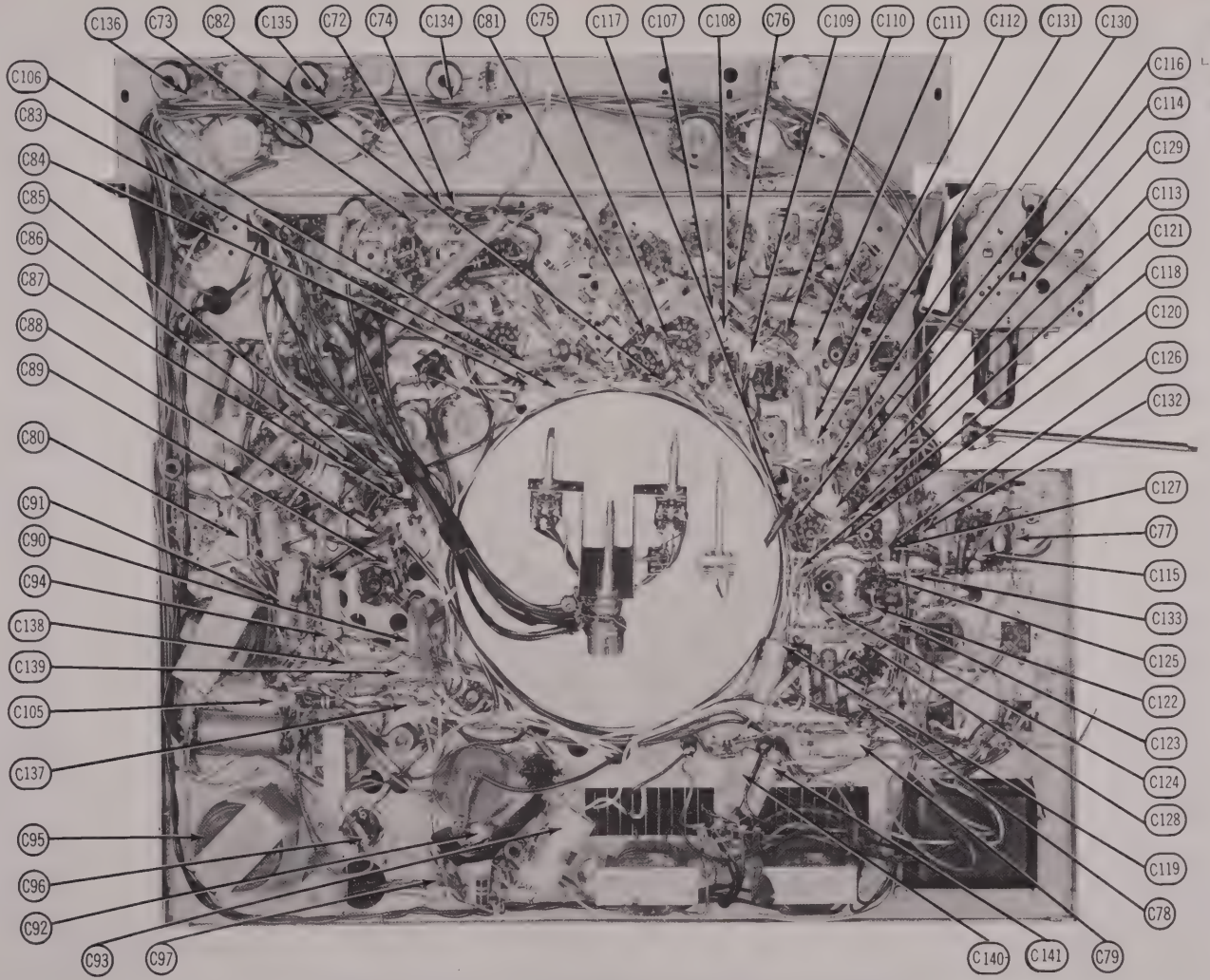
FOLDER 3



CHASSIS BOTTOM - CAPACITOR IDENTIFICATION (C1 THRU C71)

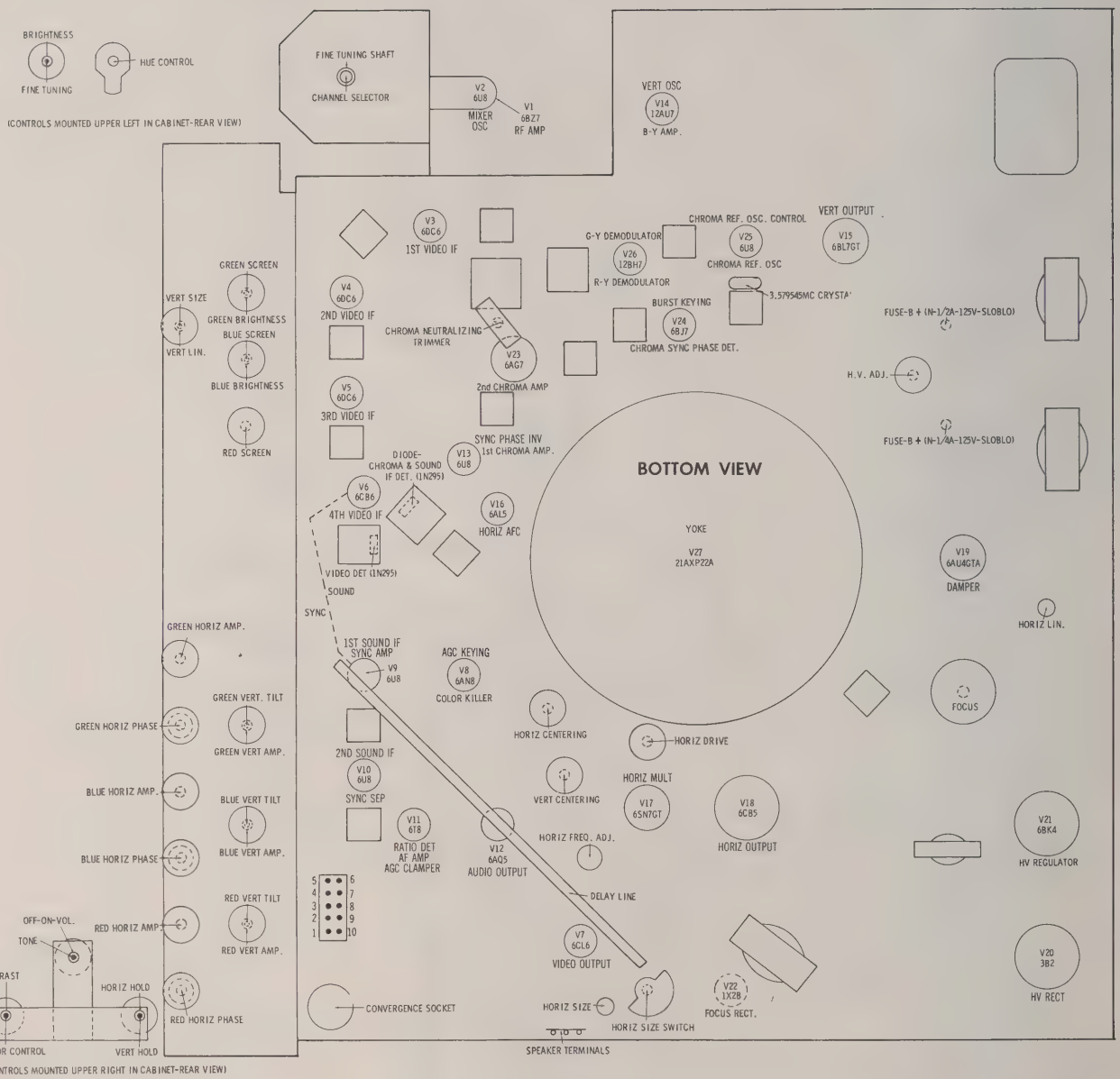


CHASSIS BOTTOM - RESISTOR IDENTIFICATION (R1 THRU R101)

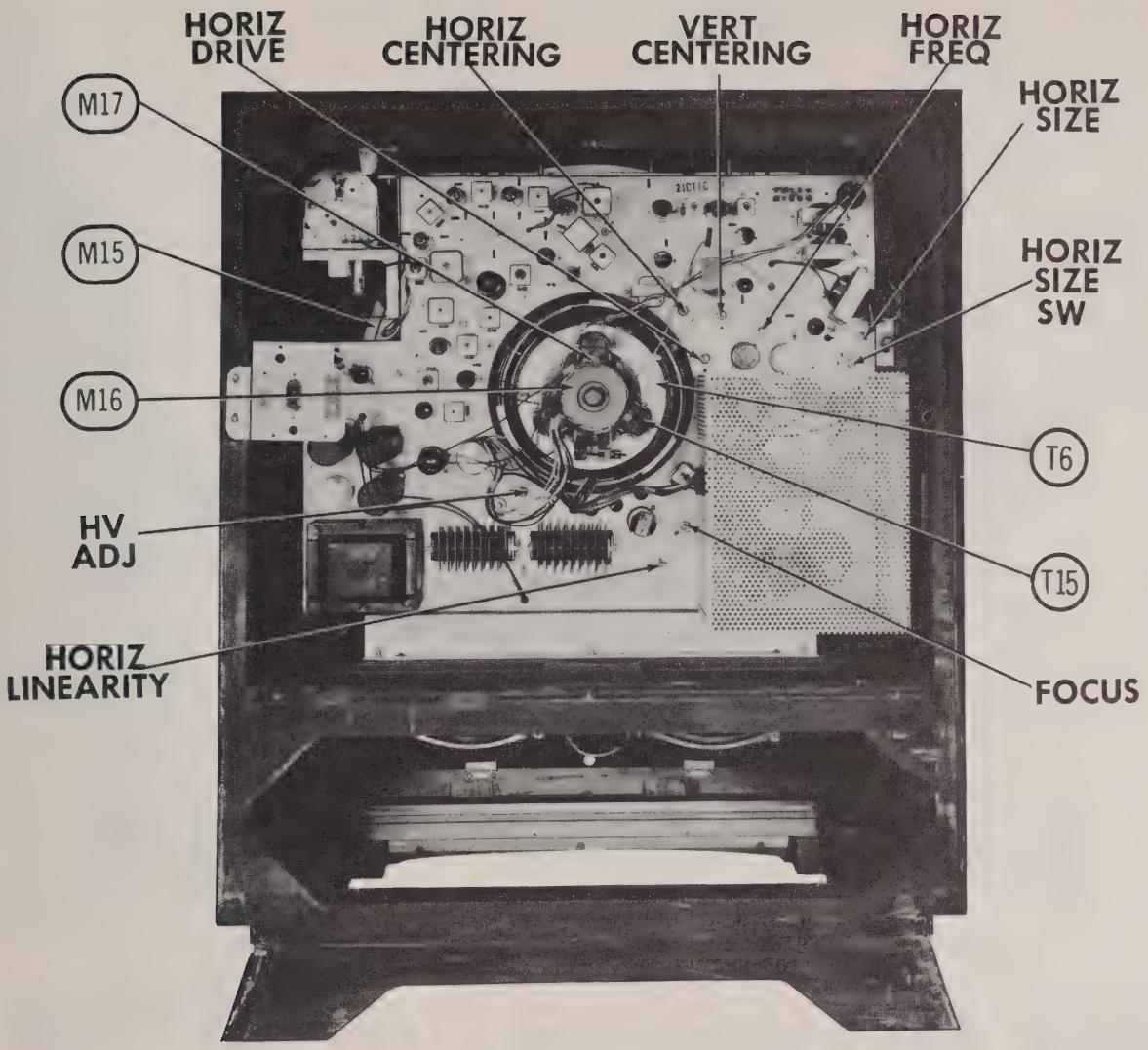


CHASSIS BOTTOM - CAPACITOR IDENTIFICATION (C72 THRU C141)

...OF
...RSHIP
...MEADE ST.
DENVER, COLORADO



TUBE PLACEMENT CHART



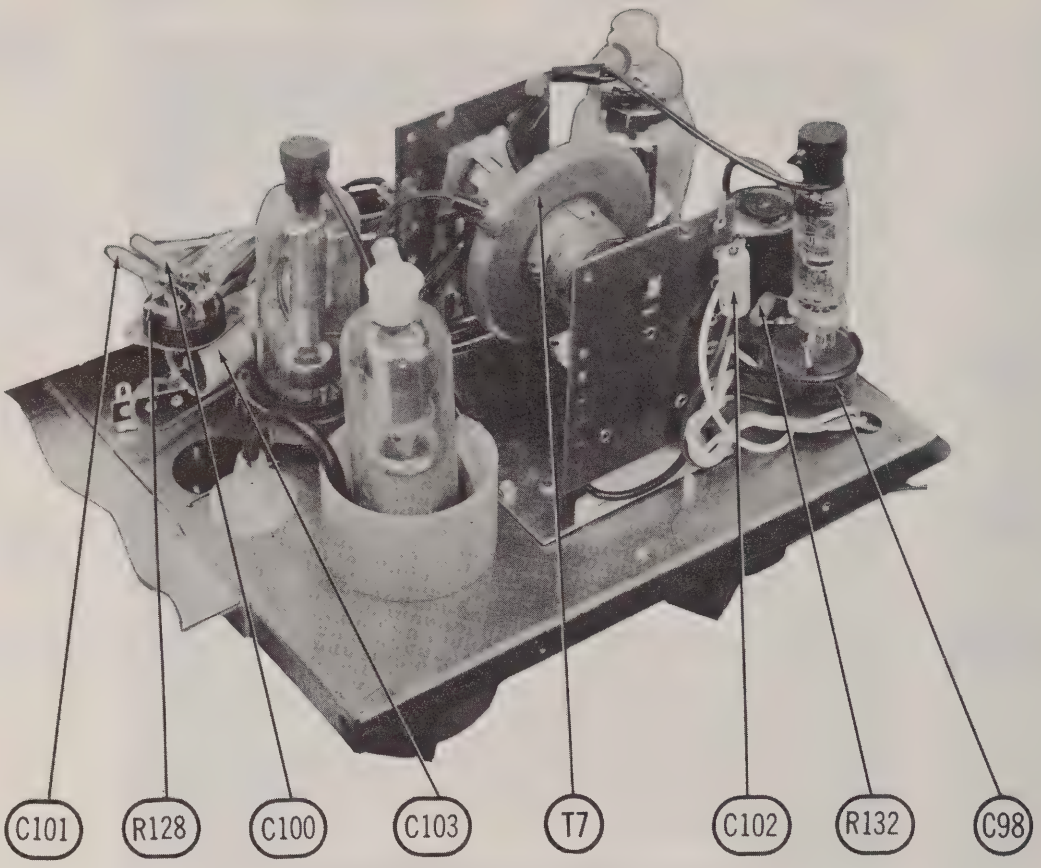
PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

CABINET—REAR VIEW

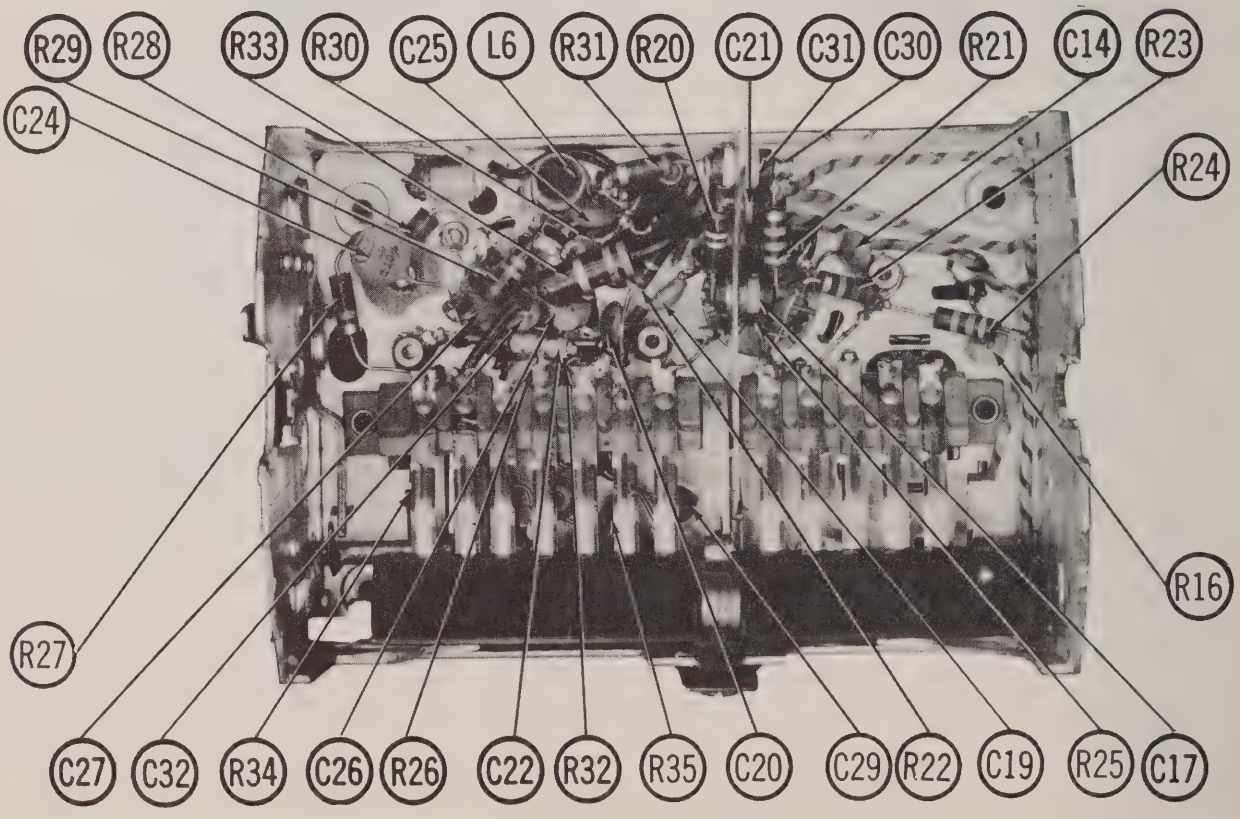
DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 9 push-on type knobs from the front.
2. Remove 4 wood screws holding 2 knob escutcheons.
3. Remove 10 wood screws and the rear cover.
4. Remove 2 bolts from the upper rear corners of the cabinet, and remove the top.
5. Remove 2 wood screws and the AC interlock.
6. Remove the control mounting brackets by removing 2 wood screws and 2 metal screws accessible under the removed escutcheons.
7. Remove 2 wood screws holding the rear support bracket.
8. Remove 2 speaker leads.
9. Remove 3 bottom and 2 side chassis bolts.
10. Remove the ground spring from chassis to neutralizing magnet.
11. Remove the picture tube socket, convergence yoke plug, yoke plug, purity magnet, blue beam positioning magnet, convergence yoke, deflection yoke.
12. Partially remove the chassis and remove the HV lead connector. NOTE: Discharge HV to picture tube harness.
13. Remove the chassis.



HI-VOLTAGE COMPARTMENT



RF TUNER-BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	6BZ7	
V2	Mixer-Oscillator	6U8	
V3	1st. Video IF Amp.	6DC6	
V4	2nd. Video IF Amp.	6DC6	
V5	3rd. Video IF Amp.	6DC6	
V6	4th. Video IF Amp.	6CB6	
V7	Video Output	6CL6	
V8	AGC Keying-Color Killer	6AN8	
V9	1st. Sound IF - Sync Amp.	6U8	
V10	2nd. Sound IF - Sync Sep.	6U8	
V11	Ratio Det. -AF Amp. - AGC Clamper	6T8	
V12	Audio Output	6AQ5	
V13	Sync Phase Inverter- 1st. Chroma Amp.	6U8	
V14	Vert. Osc. - B-Y Amp.	12AU7	

ITEM No.	USE	TYPE	NOTES
V15	Vert. Output	6BL7GT	
V16	Horiz. AFC	6AL5	
V17	Horiz. Mult.	6SN7GT	
V18	Horiz. Output	6CB5	
V19	Damper	6AU4GTA	
V20	HV Rectifier	3B2	
V21	HV Regulator	6BK4	
V22	Focus Rectifier	1X2B	
V23	2nd. Chroma Amp.	6AG7	
V24	Burst Keying- Chroma Sync-Phase Det.	6BJ7	
V25	Chroma Ref. Osc. Control- Chroma Ref. Osc.	6U8	
V26	G-Y Demodulator- R-Y Demodulator	12BH7A	

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

PICTURE TUBE

ITEM No.	REPLACEMENT DATA			NOTES
	TRUETONE PART No.	GENERAL ELECTRIC PART No.	SYLVANIA PART No.	
V27	21AXP22A	21AXP22A	21AXP22A	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	TRUETONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	200	250	8C-26120	AFHS1-37-30	XA0318	FP126	TMS-75	S-160 / MT-2540	TVL-1547
C2	200	250	8C-26120	AFHS1-37-30	XA0318	FP126	TMS-75	S-160 / MT-2540	TVL-1547
C3	200	250	8C-26120	AFHS1-37-30	XA0318	FP126	TMS-75	S-160 / MT-2540	TVL-1547
C4	90	475	8C-26117	AFH1-57	A0570	FP187	TMS-71	S-305	TVL-1850
C5	2	25	8C-26299	PRS50V2	BBR2-50	TC302	TD-2-25	FM-0502	TVA-1202
C6A	▲10	25	8C-26121					D-015 / MTD-0210	R2436 *
B	■10	25							
C	▲1000	15							
C7	4	75	8C-26297	PRS150V4	BBR4-150	TC40	TD-4-150	FM-1504	TVA-1402
C8A	■4	50	8C-26119	AFH4-60		FP376.6 / TC30		Q-035 / MT-0504	R2435 *
B	▲25	25							
C	10	25							
D	▲10	450							
C9A	▲10	350	8C-26118	AFH4-10	DO480	FP434	TMQ-80	Q-330	TVL-4750
B	▲10	450							
C	10	25							
D	■10	450							
C10	500	6	8C-26070 ①	PRS6VNP500	BR1000-6 † / BR1000-6 †	TC610 † / TC610 †	TD-1000-6 † / TD-1000-6 †	MTH-06100 † / MTH-06100 †	R2434*
C11	4	75	8C-26297	PRS150V4	BBR4-150	TC40	TD-4-150	FM-1504	TVA-1402
C12	4	150	8C-26298	PRS150V4	BBR4-150	TC40	TD-4-150	FM-1504	TVA-1402
C13	4	150	8C-26298	PRS150V4	BBR4-150	TC40	TD-4-150	FM-1504	TVA-1402

* Non-catalog item.
† Connect negative leads together.
① Non-polarized unit.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C14	3			NP0-SI 3.0	TCZ-3.3	C10V3C	TCO-3	ZT-553	5TCCB-V3	NP0
C15	3-9				829-10		532-B			
C16	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C17	800									
C18	.5-3				829-3		3115-D	CT565A		
C19	1.5			NP0-SI 1.5	TCZ-1R5	C10V15C	TCO-1.5	ZT-5515	5TCCB-V15	NP0
C20	47									N140
C21	800									
C22	47									
C23	.3-2.5									
C24	220			BPD-00022	DD-221	L10T22	ED-220	UC-5322	5GA-T22	
C25	30									N75
C26	10			NP0-SI 10	TCZ-10	L10Q1	ED-10	UC-541	5GA-Q1	
C27	5			NP0-SI 5	TCZ-5	L10V5	ED-5	ZT-555		
C28	.5-3				829-3		3115-D	CT565A		
C29	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C30	800									
C31	800									
C32	1000			BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C33	680			BPD-00068	DD-681	BYA10T68	ED-680	UC-5368	5GA-T68	
C34	800			BPD-008	DD-801	L10T8	ED-800		5GA-T8	
C35	680			BPD-00068	DD-681	BYA10T68	ED-680	UC-5368	5GA-T68	
C36	800			BPD-0008	DD-801	L10T8	ED-800		5GA-T8	
C37	800			BPD-0008	DD-801	L10T8	ED-800		5GA-T8	
C38	680			BPD-00068	DD-681	BYA10T68	ED-680	UC-5368	5GA-T68	
C39	800			BPD-0008	DD-801	L10T8	ED-800		5GA-T8	
C40	800			BPD-0008	DD-801	L10T8	ED-800		5GA-T8	
C41	800			BPD-0008	DD-801	L10T8	ED-800		5GA-T8	
C42A	800			BPD-0008	DD-801	L10T8	ED-800		5GA-T8	
B	800			BPD-0008	DD-801	L10T8	ED-800		5GA-T8	
C43	800			BPD-0008	DD-801	L10T8	ED-800		5GA-T8	
C44	3.4			NP0-SI 3.3	TCZ-3R3	C10V33C	TCO-3.3	ZT-5533	5TCCB-V33	
C45	82			1469-000082	TCZ-82	22R5Q82	TCO-82		MS-482	5%
C46	150			1469-00015	DD-151	22R5T15	TCO-150	ZT-5315	MS-315	10%
C47	.0068	600		P688N-0068	D6-682	CUB6D68	GP-6800	GEM-6268	6TM-D68	
C48	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C49	470	2000		HVD-30-470	DD30-471	HVB20T47	HD3-470	DC30347	20GA-T47	
C50	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C51	800			BPD-0008	DD-801	L10T8	ED-800		5GA-T8	
C52A	800			BPD-0008	DD-801	L10T8	ED-800		5GA-T8	
B	800			BPD-0008	DD-801	L10T8	ED-800		5GA-T8	

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP	RATING VOLT	REPLACEMENT DATA TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C53	800			BPD-0008	DD-801	CL07B	ED-800		5GA-T8	
C54	800			BPD-0008	DD-801	CL07B	ED-800		5GA-T8	
C55	.047	600		BPD-05	DF-503	CUB8S47		GEM-6147	8TM-S47	
C56	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C57	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C58	56			1469-00056	DD-560	22E5Q56	TCO-56		MS-456	10%
C59	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C60	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C61	1000			BPD-001	DD-102	BYA5D1	ED-001	DC521	5HK-D1	
C62	1000			BPD-001	DD-102	BYA5D1	ED-001	DC521	5HK-D1	
C63	10000			BPD-01	DD-103	BYA5S1	ED-01	DC531	5HK-S1	
C64	.01	400		BPD-01	DD-103	CU34S1	ED-01	GEM-411	4TM-S1	
C65	.022	200		BPD-03	DF-303	CUB2S23	ED-03	GEM-3122	2TM-S22	
C66	.5	300		P588N-4		CUB2P5		GEM-3105	2TM-P5	
C67	.0047	400		BPD-0047	DD-472	CUB4D47	GP-4700	GEM-4347	4TM-D47	
C68	270			1469-00027	TCZ-270	22S5T27	TCO-270		MS-327	10%
C69	1	200		P588N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C70	.0047	600		BPD-0047	DD-472	CUB6D47	GP-4700	GEM-6347	6TM-D47	
C71	.1	400		P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C72	10000			BPD-01	DD-103	BYA5S1	ED-01	DC531	5HK-S1	
C73	330			1469-00033		22H5T33			MS-333	10%
C74	10000			BPD-01	DD-103	BYA5S1	ED-01	DC531	5HK-S1	
C75	47			1469-00047	DD-470	22H5Q47	TCO-47		MS-447	10%
C76	4700			1467-0047	DD-472	1W5D47			1FM-247	Note 1
C77	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C78	1	400		P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C79	22	400		P488N-22		CUB4P22		GEM-4122	4TM-P22	
C80	.01	1800		P1688N-01	DD-103	CUB1S1		GEM-1611	1STM-S1	
C81	1000			1484-001		1R5D1			MS-2I	10%
C82	1000			1464-001		1R5D1			MS-2I	10%
C83	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C84	.047	200		BPD-05	DF-503	CUB2S47		GEM-6147	2TM-S47	
C85	330			1469-00033		22S5T33			MS-333	10%
C86	3900			1467-0039	DE-402	1R5D39	ED-004		1FM-239	
C87	18			1469-00018	DE-180	22S5Q18	TCO-18		MS-418	10%
C88	470			1469-00047	DE-471	5R5T47			MS-347	10%
C89	.01	400		BPD-01	DD-103	CU34S1	GP-1000	GEM-411	4TM-S1	
C90	.1	400		P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C91	.47	400		P488N-47		CUB4P47		GEM-4047	4TM-P47	
C92	22	400		P488N-22		CUB4P22		GEM-4022	4TM-P22	
C93	25	1000	8D26142							
C94	.047	600		BPD-05	DF-503	CUB6S47		GEM-6147	6TM-S47	
C95	2000	30000	8G-28069							
C96	10000			BPD-01	DD-103	BYA8S1	ED-01	DC511	5HK-S1	
C97	1500	10000	8G-26124							
C98	1500	15000	8G-28073							
C99	150	3000								N1500
C100	120	5000								N1500
C101	100	5000		HVD-80-100	DD60-101	HVB50T1			5GA-T1	
C102	.022	600		BPD-03	DF-303	CUB6S23		GEM-6123	6TM-S22	
C103	.25	1000	8D-26142							
C104	.25	1000	8D-26142							
C105	10000			BPD-01	DD-103	BYA8S1	ED-01	DC511	5HK-S1	
C106	.01	400		BPD-01	DD-103	CU34S1	GP-10000	GEM-411	4TM-S1	
C107	10000			BPD-01	DD-103	BYA8S1	ED-01	DC511	5HK-S1	
C108	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C109	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C110	560			1464-00056	DE-561	1R5T56			MS-356	10%
C111	80-280		8E-26071							
C112	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C113	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C114	33			1469-00033	DD-330	22S5Q33	TCO-33		MS-433	10%
C115	10000			BPD-01	DD-103	BYA8S1	ED-01	DC511	5HK-S1	
C116	10000			BPD-001	DD-102	BYA5D1	ED-1000	DC521	5HK-D1	
C117	22			1469-00022	DE-220	22S5Q23	TCO-22		MS-422	10%
C118	10000			BPD-01	DD-103	BYA8S1	ED-01	DC511	5HK-S1	
C119	22	800		P588N-22		CUB2P23		GEM-3022	2TM-P22	
C120	1000			1464-001		1R5D1			MS-2I	10%
C121	1000			1464-001		1R5D1			MS-2I	10%
C122	2.2			NPO-S1.2.2	TCZ-2R2	C10Y22C	TCO-2.2		5TCCB-Y22	
C123	10000			BPD-01	DD-103	BYA8S1	ED-01	DC511	5HK-S1	
C124	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C125	82			1469-00082	DE-820	22S5Q83	TCO-82		MS-482	10%
C126	1000			BPD-001	DD-102	BYA5D1	ED-1000	DC521	5HK-D1	
C127	27			1468-000027	DE-270	5W5Q27	ED-27		1FM-427	
C128	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C129	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C130	33			1469-00033	DD-330	22S5Q33	TCO-33		MS-433	10%
C131	1.5-7		8E-26174				539-3			
C132	10000			BPD-01	DD-103	BYA8S1	ED-01	DC511	5HK-S1	
C133	10000			BPD-01	DD-103	BYA8S1	ED-01	DC511	5HK-S1	
C134	2200			1467-0022	DE-222	1W5D22	ED-0022	UC-5222	1FM-222	
C135	2200			1467-0022	DE-222	1W5D22	ED-0022	UC-5222	1FM-222	
C136	2200			1467-0022	DE-222	1W5D22	ED-0022	UC-5222	1FM-222	
C137	680	2000		HVD-30-680	DD60-681	HVB30T68	HD3-680	DC30368		
C138	.01	800		BPD-01	DD-103	CUB8S1	GP-10000	GEM-611	6TM-S1	
C139	.01	800		BPD-01	DD-103	CUB6S1	GP-10000	GEM-611	6TM-S1	
C140	.047	800		BPD-05	DF-503	CUB6S47		GEM-6147	6TM-S47	
C141	.047	800		BPD-05	DF-503	CUB8S47		GEM-6147	8TM-S47	

Note 1. Some versions may use an 800MMF

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA TRUETONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2Meg	½	10A-28087	F1-67			UX1B456	Tone
B	1Meg	½		R2-67		∘{	Not Req.	Volume - Tap ⑤ 300K
C	Switch			KH-1		Not Req.	Not Req.	
R2A	500Ω	½	10B-28060	F1-1		UE87		Contrast
B	3000Ω	½		R2-3		∘∘{	Not Req.	Color
R3A	10K	½	10B-28058	F1-23		† {	UE72	Horiz. Hold
B	1Meg	½		R2-51		Not Req.	Vert. Hold	
R4	500K	½	10B-28059					Brightness
R5A	250Ω	2 (WW)	10B-28707					Red Vert. Amp.
B	100Ω	2 (WW)						Red Vert. Tilt
R6A	250Ω	2 (WW)	10B-28707					Blue Vert. Amp.
B	100Ω	2 (WW)						Blue Vert. Tilt
R7A	250Ω	2 (WW)	10B-28707					Green Vert. Amp.
B	100Ω	2 (WW)						Green Vert Tilt
R8A	1Meg	½	10B-28109	B-69	A47-1Meg-S	GB-137	UB4	Red Screen
B	Shaft			Not Req.	KS8-3	Not Req.	Not Req.	
R9A	500K	½	10B-28110	R2-51		†† {	UR16L	Blue Bright
B	1Meg	½		R2-67				Blue Screen

ITEM No	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA TRUETONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R10A	500K	½	10B-26110	F1-40		†† {	UF55L	Green Bright
B	1Meg	½		R2-51			UR16L	Green Screen
R11A	1000Ω	½	10B-26108	B-5	A47-1000-S	GJ1-108	U4	Red Horiz. Amp.
B	Shaft			Not Req.	KS8-3	Not Req.	Not Req.	
R12A	1000Ω	½	10B-26108	B-5	A47-1000-S	GJ1-108	U4	Blue Horiz. Amp.
B	Shaft			Not Req.	KS8-3	Not Req.	Not Req.	
R13A	1000Ω	½	10B-26108	B-5	A47-1000-S	GJ1-108	U4	Green Horiz. Amp.
B	Shaft			Not Req.	■■-3	Not Req.	Not Req.	
R14A	1000Ω	2(WW)	10B-28111			WJ100		Vert. Lin.
B	1Meg	2(WW)						Vert. Size
R15A	10Ω	2(WW)	10D-26112			WPK100		Horiz. Centering
B	10Ω	2(WW)				WJ100		Horiz. Centering
R16A	500Ω	2(WW)	10D-26113			WPK200		Vert. Centering
B	200Ω	2(WW)	10D-26113			WWJ200		Vert. Centering
R17A	1000Ω	½	10B-26257	B-10	A47-5000-S	GJ1-114	U14	Horiz. Drive
B	Shaft			Not Req.	KS8-3	Not Req.	Not Req.	
R18	5Meg	2	10B-26100					Focus
R19A	1Meg	½	10B-19296	AB-69	A47-1Meg-S	GJ1-137	U54	Hi-Voltage Adjustment
B	Shaft			AK-1	FKS-1/2	SQ	Not Req.	

* Concentrikit Equivalent K-4 Kit, Base Elements & Shafts B11-139, P1-210 (Panel)
B11-137, R1-223 (Rear)
76-1 (Switch)

** Concentrikit Equivalent K-2 Kit, Base Elements & Shafts B11-103, P1-116 (Panel)
B11-110, R1-130 (Rear)

† Concentrikit Equivalent K-2 Kit, Base Elements & Shafts B11-116, P1-116 (Panel)
B11-137, R1-130 (Rear)

†† Concentrikit Equivalent K-2 Kit, Base Elements & Shafts B11-153, P9-021 (Panel)
B11-137, R12-108 (Rear)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	TRUETONE PART No.	NOTES
R20	820K			
R21	470K			
R22	470Ω			
R23	22K			
R24	47K			
R25	22Ω			
R26	6800Ω			
R27	100K			
R28	100K			
R29	100K			
R30	33Ω 5%			
R31	820Ω			
R32	10K			
R33	3300Ω	1		
R34	120Ω			
R35	33K			
R36	6800Ω 5%	2		
R37	47K			
R38	1.2Meg			
R39	10Meg			
R40	6800Ω 5%			
R41	9000Ω 5%			
R42	1000Ω			
R43	10Ω 5%			
R44	2700Ω	1		
R45	47Ω 5%			
R46	47K 5%			
R47	10000			
R48	10Ω 5%			
R49	2700Ω	1		
R50	100Ω			
R51	56Ω 5%			
R52	1000Ω			
R53	47K 5%			
R54	47K 5%			
R55	2700Ω	1		
R56	100Ω			
R57	47Ω			
R58	39000Ω 5%			
R59	470Ω			
R60	100Ω			
R61	330Ω 5%			
R62	47K			
R63	4700Ω			
R64	15K			
R65	43000Ω 5%			
R66	1000			
R67	8500Ω	10	9C-26312	
R68	180K	1		
R69	3900Ω	2		
R70	560Ω			
R71	18Ω	2		
R72	5Ω 5%	1		
R73	10K	2		
R74	82Ω			
R75	100K			
R76	18K			
R77	1000Ω			
R78	27K			
R79	39K			
R80	15K			
R81	22K			
R82	10Meg			
R83	100K			
R84	100K			
R85	82K			
R86	220K			
R87	33K			
R88	10K	1		
R89	1Meg			
R90	3300Ω			
R91	470Ω			
R92	2200Ω			
R93	470K			
R94	2.7Meg			
R95	47K			
R96	39K			Note 3
R97	150K			Note 3

ITEM No.	RATING OHMS	RATING WATT	TRUETONE PART No.	NOTES
R98	47K			
R99	100K			
R100	150K			
R101	8200Ω 5%	2		
R102	1Meg			
R103	1Meg 5%			
R104	470K			
R105	56K			
R106	1000			
R107	100Ω			
R108	2.2Meg			
R109	10K			
R110	470Ω	1		
R111	1000Ω			
R112	1000Ω			
R113	100K			
R114	100K			
R115	4.7Meg			
R116	470K			
R117	100K			
R118	5800Ω 5%	1		
R119	120K			
R120	470Ω			
R121	18000 5%			
R122	6800Ω			
R123	1000			
R124	470K			
R125	100Ω			
R126	10K	10	9C-28311	
R127	2700Ω	1		
R128	4700Ω			
R129	10K	2		
R130	1000Ω	1		
R131	15K	1		
R132	560K	1		
R133	2. 2Meg	2		Note 2
R134	2. 2Meg	2		Note 2
R135	2. 2Meg	2		Note 2
R136	2. 2Meg	2		Note 2
R137	560K			
R138	1Meg			
R139	1. 8Meg			
R140	10K	1		
R141	12K	1		
R142	56K			
R143	47K			
R144	12K	1		
R145	1500Ω	1		
R146	10000			
R147	12000			
R148	470Ω	1		
R149	15K	2		
R150	3300Ω	7	9C-26313	
R151	5. 6Meg			
R152	3. 9Meg			
R153	680K			
R154	4. 7Meg			
R155	12K	1		
R156	68K	1		
R157	220Ω	1		
R158	10K			
R159	1Meg 5%			
R160	1Meg 5%			
R161	15K			
R162	2200Ω			
R163	560Ω			
R164	330K			
R165	4700Ω			
R166	10K	1		
R167	5100Ω 5%	2		
R168	15K			
R169	1000Ω			
R170	2200Ω			
R171	22K	1		
R172	6800Ω	1		
R173	22K	1		
R174	18K	2		Note 3
R175	22K	2		Note 3

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	TRUETONE PART No.	NOTES
R176	27K 5%			
R177	2700Ω			
R178	1000Ω			
R179	10K			
R180	22K	1		
R181	68K	2		
R182	51K 5%			
R183	2700Ω			
R184	27K 5%			Note 4
R185	270K			Note 4
R186	15K 5%	2		Note 4
R187	58000Ω 5%			
R188	330K			
R189	270K			
R190	270K			
R191	270K			Note 5
R192	330K			
R193	470K			
R194	330K			
R195	560K			
R196	580K			
R197	68K			
R198	56K			
R199	150K			
R200	22K	2		Note 4
R201	22K	2		Note 4
R202	22K	2		Note 4
R203	10Ω	1		
R204	1000Ω 5%			
R205	56K			Note 5
R206	470K			

Note 1. Some versions may use a 10K in this application.
Note 2 Some versions may use a single 3.8Meg, 2W to replace R133, R134, R135 and R136.
Note 3. Some versions may use a single 39K, 2W to replace R174 and R175
Note 4. Some versions may use a single 50K, 2W to replace R200, R201 and R202
Note 5. Some versions may use a 100K in this application.

TRANSFORMER (POWER)

ITEM No	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA TRUETONE PART No.	Halldorson PART No.	Merit PART No	Stancor PART No	Thordarson PART No	Triad PART No
T1	117VAC ⑤ 4A	190V Tap ⑤ 170V ⑤ 530A	6.3V ⑤ 7.8A	12.6VCT ⑤ 7.8A	12A-28092					

TRANSFORMER (FILAMENT)

ITEM No	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA TRUETONE PART No.	Halldorson PART No.	Merit PART No	Stancor PART No	Thordarson PART No	Triad PART No
T2	6.3V ⑤ 7A	6.3V ⑤ 49A			12D-28563		P-3097 ①			

① Drill one new mounting hole.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T3	Vert. Osc.	12M-16241	B6703	A-3003	V405	A-8125	35A03	A-97X	
T4	Vert. Output	12E-26725							
T5	Vert. Isolation	12M-26115							
T6A	Yoke-Horiz.(12MH)	20I-26248-1							
B	Vert. (121MH)								
T7	Horiz. Output	12E-26539							
T8	Horiz. Size Coil (.35MH - 2.2MH)	13M-26268	RF804	MWC-2 ①	20LR13A	WC-7	WC-23 ①	WLC-7 ②	
T9	Horiz. Linearity Coil (.35MH - 2.2MH)	13M-26268	RF804	MWC-2 ①	20LR13A	WC-7	WC-23 ①	WLC-7 ②	
T10	Low Isolation	13M-26156							
T11	Inductor Coil (16 8MH) High Isolation Inductor Coil (265MH)	13M-26076							
	Alt. High Isolation Inductor Coil	13M-26076-1							
T12	Green Horiz. Convergence Phase Coil	13M-26708							
T13	Blue Horiz. Convergence Phase Coil	13M-26708							
T14	Red Horiz. Convergence Phase Coil	13M-26708							
T15	Convergence Yoke Assy.	55P-26711 ③							

① Enlarge mounting hole.
② Use tap.
③ Includes green, blue and red convergence coils.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T16	4600Ω	3 2Ω Tap ⑤ 1.5Ω	12C-28085						

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA TRUETONE PART No.	QUAM PART No.	NOTES
SP1	6" x 9"	PM	3-4Ω	18A-24035	69A3	
	5" x 7"	PM	3-4Ω	18A-18896	57A1	
SP2	6" x 9"	PM	3-4Ω	18A-24035	69A3	

COILS (RF-IF)

ITEM No.	USE	TRUETONE PART No.	NOTES
L1	Ant. Filter Coils	31K-225-01	Includes complete assy.
L2A	VHF Ant. Coils	31M-013-2	Channel 2
B	"	31M-013-3	Channel 3
C	"	31M-013-4	Channel 4
D	"	31M-013-5	Channel 5
E	"	31M-013-6	Channel 6
F	"	31M-013-7	Channel 7
G	"	31M-013-8	Channel 8
H	"	31M-013-9	Channel 9
I	"	31M-013-10	Channel 10
J	"	31M-013-11	Channel 11
L3C	VHF RF & Osc. Coils	31M-013-4	Channel 4
D	"	31M-013-5	Channel 5
E	"	31M-013-6	Channel 6
F	"	31M-013-7	Channel 7
H	"	31M-013-8	Channel 8
I	"	31M-013-9	Channel 9
J	"	31M-013-10	Channel 10
K	"	31M-013-11	Channel 11
L	"	31M-013-12	Channel 12
M	"	31M-013-13	Channel 13
L4	UHF Ant. Coils	31M-013-.1U	

TRUETONE MODELS 2D1728, 2D1729

FOLDER 3

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (cont)

ITEM No.	USE	TRUETONE PART No.	NOTES
L2 K	VHF Ant. Coils	31M-013-12	Channel 12
L	"	31M-013-13	Channel 13
L3A	VHF RF & Osc. Coils	31M-113-2	Channel 2
B	"	31M-113-3	Channel 3

ITEM No.	USE	TRUETONE PART No.	NOTES
L5	UHF IF Coils	31M-113-.1U	
L6	Mixer Plate Coil	31K-970	

ITEM No.	USE	REPLACEMENT DATA				NOTES
		TRUETONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L7	1st. Video IF	13A-26081				
L8A	41.25MC Trap	13A-26086				
B	47.25MC Trap					
L9	Fil. Choke	16A-25688	19-1001	BC-562	4604	1.5 Microhenries
L10	2nd. Video IF	13M-26083	17-5004 ■	TV-155	6234 ■	■ Use adaptor plate
L11	Fil. Choke	16A-25688	19-1001	BC-562	4604	1.5 Microhenries
L12	3rd. Video IF	13M-26083	17-5004 ■	TV-155	6234 ■	■ Use adaptor plate
L13	Fil. Choke	16A-25688	19-1001	BC-562	4604	1.5 Microhenries
L14	4th. Video IF	13M-26083	17-5004 ■	TV-155	6234	■ Use adaptor plate
L15	Video Det. Assy.	13B-26080-1				Includes caps., coils, M7 and a 5600Ω, 5% resistor Tapped
L16	41.25MC Trap	13M-26267				
L17	Chroma & Sound Det. Assy.	13B-26087				Includes caps., coils, M8, a 470K & a 5600Ω (5%)resistors and 4.5MC trap
L18	Series Peaking Coil	16A-26156	19-1005	BC-566	4612	10 Microhenries
L19	Series Peaking Coil	16A-26417	19-3100	TV-194	6112	102 Microhenries
L20	Series Peaking Coil	16A-26417	19-3100	TV-194	6112	102 Microhenries
L21	3.58MC Trap	13M-26082				
L22	Shunt Peaking Coil	16A-26416	19-3500	TV-188	6144	560 Microhenries
L23A	Series Peaking Coil	16A-26412				
B	Shunt Peaking Coil					
L24	RF Choke	16A-26156	19-1005	BC-566	4612	10 Microhenries
L25	Sound IF	13M-26242	17-3495	TV-113	6203	
L26	Ratio Det.	13M-26243	17-3497	TV-115	6205	Tertiary winding - .7Ω
L27	Chroma Input Coil	13A-26088				Includes 4.5MC trap
L28	RF Choke	16A-26151	19-5100	BC-513	4652	1 Millihenry
L29	1st. Chroma Amp. Plate Coil	13M-26260				
L30	2nd. Chroma Amp. Plate Coil	13M-26411				
L31	Burst Take-off Coil	13B-26264				Tapped @ 2.1Ω
L32	7.2MC Trap	13M-26265				
L33	RF Choke	16A-26161	19-3036	TV-180	6176	39 Microhenries
L34	Chroma Reference Osc. Coil	13M-26263				
L35	RF Choke	16A-26151	19-5100	BC-513	4652	1 Millihenry
L36	Chroma Reference Osc. Plate Coil	13D-26262				
L37	Demodulator Grid Coil	13D-26259				
L38	Demodulator Driver Trans.	13M-26261				
L39	Series Peaking Coil	16A-26151	19-5100	BC-513	4652	1 Millihenry
L40	Series Peaking Coil	16A-26151	19-5100	BC-513	4652	1 Millihenry
L41	RF Choke	16A-26162			4611	8 Microhenries
L42	RF Choke	16A-26155	19-6033			30 Microhenries

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA							NOTES
	PRI.	SEC.	TRUETONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	RCA TYPE No.	Ram PART No.	Thordarson PART No.	
L43	73Ω		13M-26310	19-1576	TV-165	6210			HS-7	Horiz. Freq.
L44	.2Ω	43Ω	13M-26258							Horiz. Phase

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L45	.330A	41Ω	1.5 HY.	16B-26052	C5037	C-2996	C-2328	26C93	C-17X
L46	.200A	41Ω	1.5 HY.	16B-26052	C5037	C-2996	C-2328	26C93	C-17X

VERT. CONVERGENCE CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L47	0MA	20Ω	.2 HY.	16M-26704					
L48	0MA	20Ω	.3 HY.	16M-26705					

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	TRUETONE PART No.	REPLACEMENT DATA	
K1	Vert. Integrator	2000MMF, 4700MMF, 4700MMF, 22K, 8200Ω, 8200Ω	17A-22376	Aerovox Centralab Cornell-Dubilier Erie Sprague	PA-110 PC-100 115TM1 1405-01 V-1

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	TRUETONE PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.530A	21J26079 ①	1207AH ①		RS650MSL ①	600 ①	① Selenium type.
M2	.530A	21J26079 ①	1207AH ①		RS650MSL ①	600 ①	

PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			TRUETONE PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M3	N	½A 125V S/B	46B-26275	55F-26273	333.500 (N ½A 125V S/B)	346009	N½	HN 3/10 to 1/2
M4	N	1/4A 125V S/B	46B-26276	55F-26274	333.250 (N 1/4A 125V S/B)	346008	N 1/4	HN 0 to 3/10
M5	2" length #26 wire							
M6	2" length #26 wire							

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		TRUETONE PART No.	CBS PART No.	SYLVANIA PART No.	
M7	1N295 *		1N60	1N60	Video Detector (PT)
M8	1N295 *		1N60	1N60	Chroma & Sound IF Detector (PT)

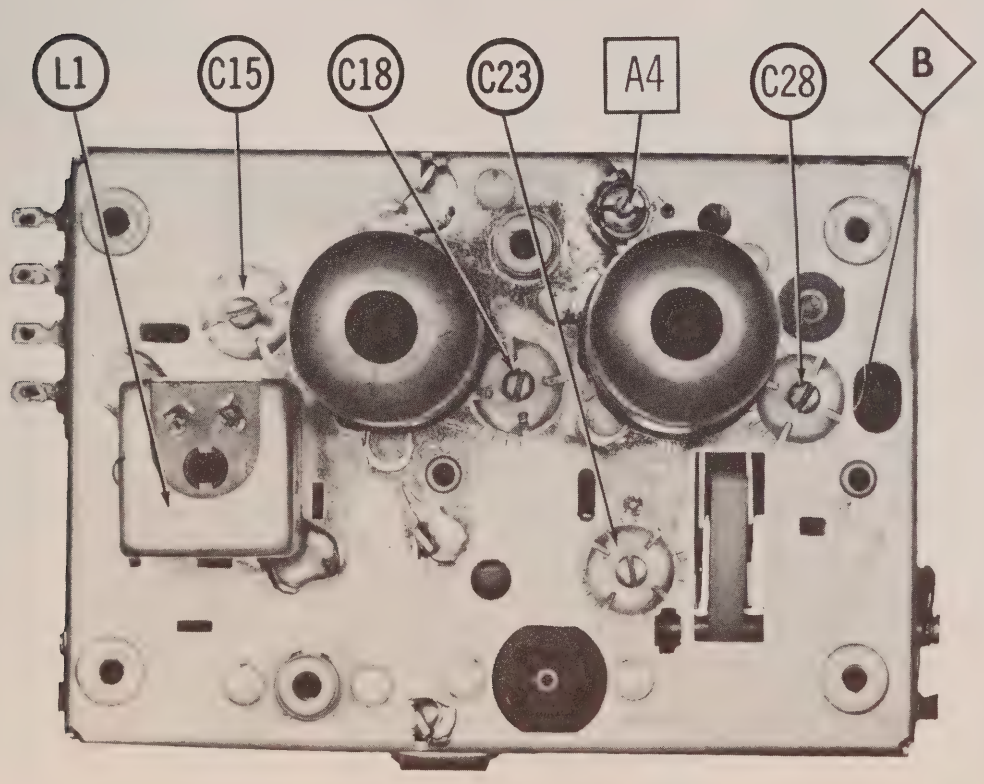
MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M9	Crystal	8M-26102	3.579545MC
M10	Pilot Light	46A-10793	Type #47
M11	Tuner	211-25983	VHF
M12	Hue Adjust	8E-26255	
M13	Delay Line	13M-26093	
M14	Switch	20A-26123	Horiz. Size (Rotary wafer type)
M15	Magnet		Field Equalizing (6 used)
M16	Magnet	55P-26098	Purity
M17	Magnet	55P-26099	Blue Beam Positioner

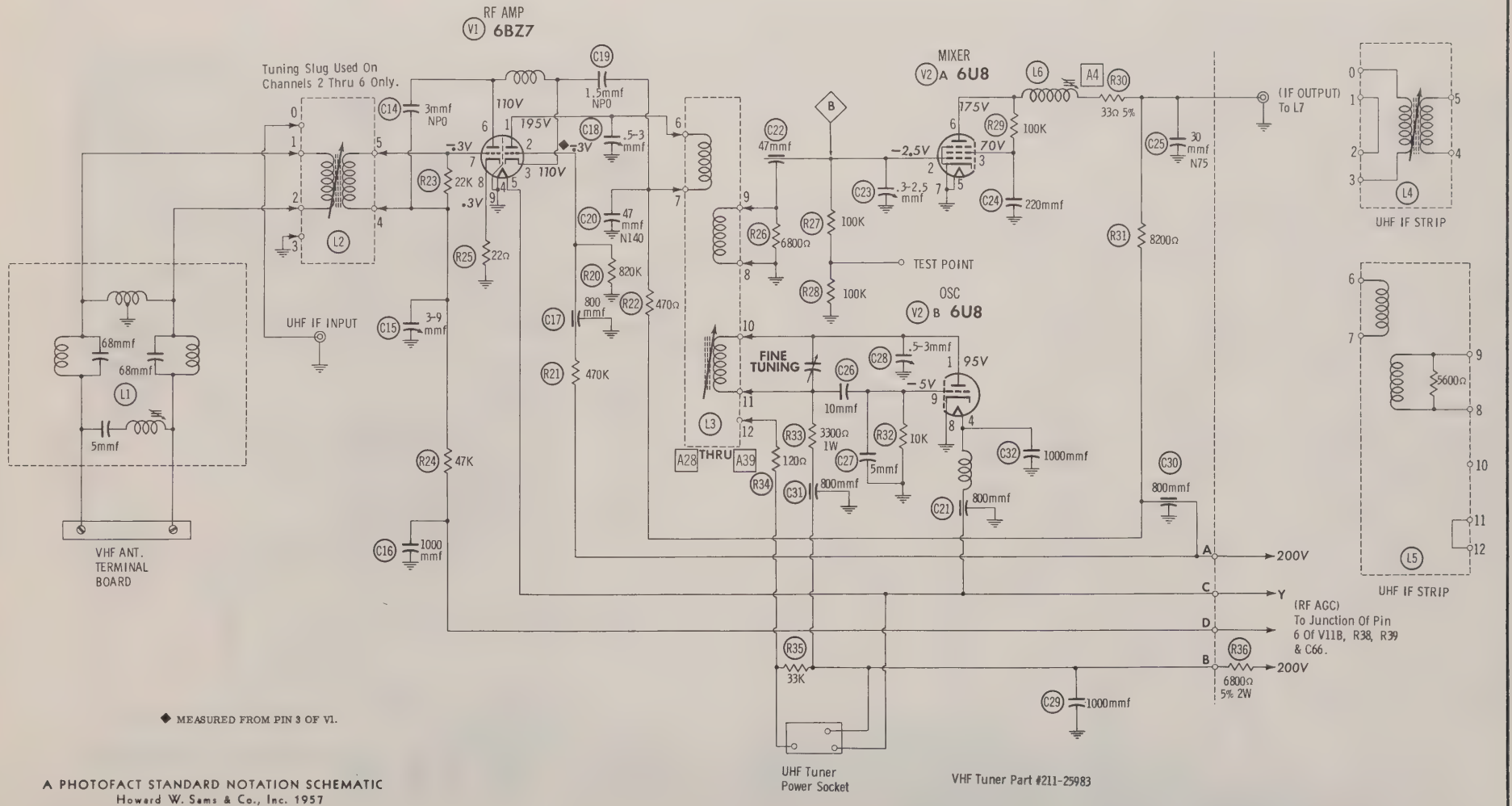
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	30M-26240	
Mask	25M-26351	

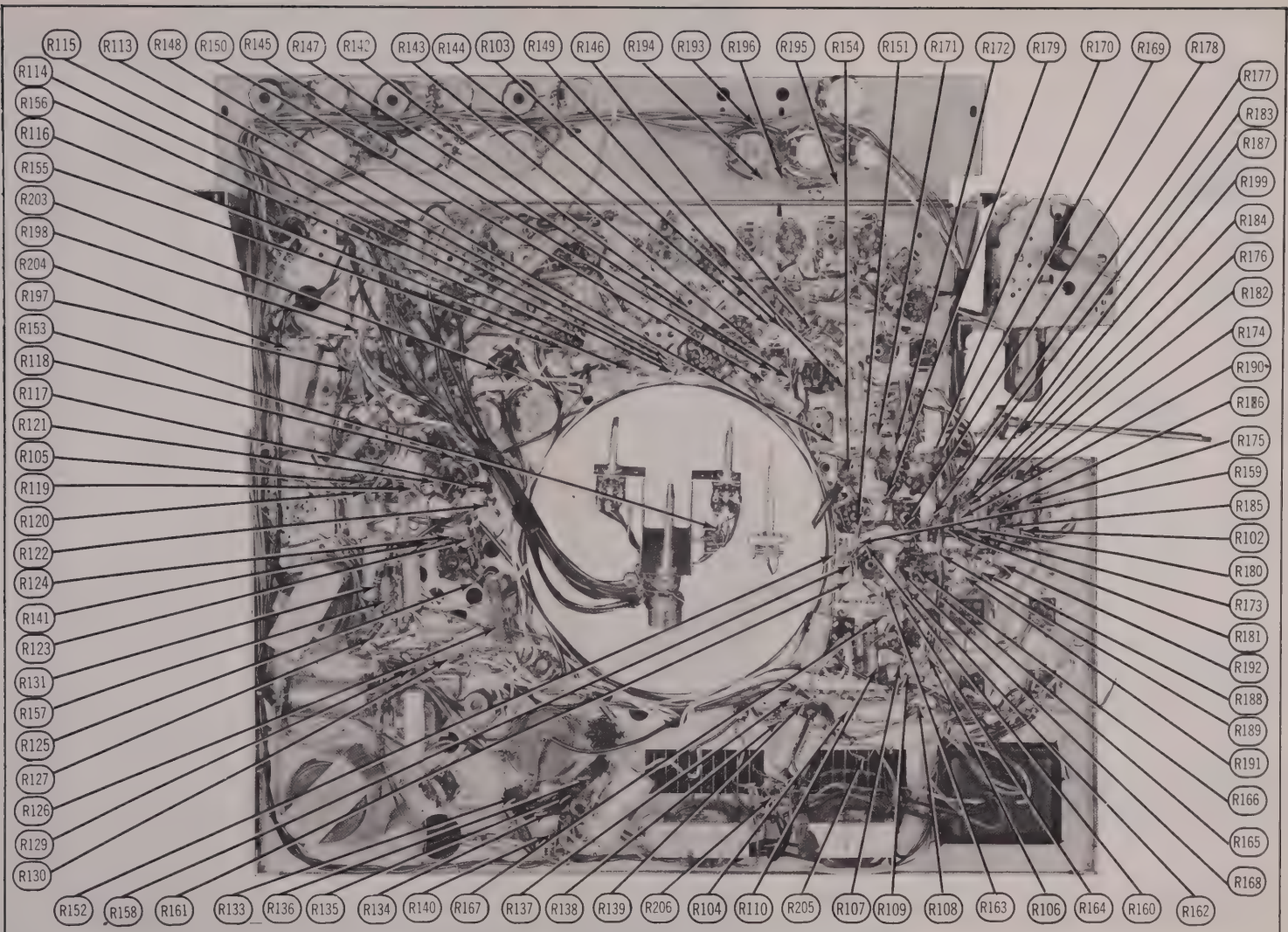


RF TUNER TOP VIEW



A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1957

TUNER SCHEMATIC



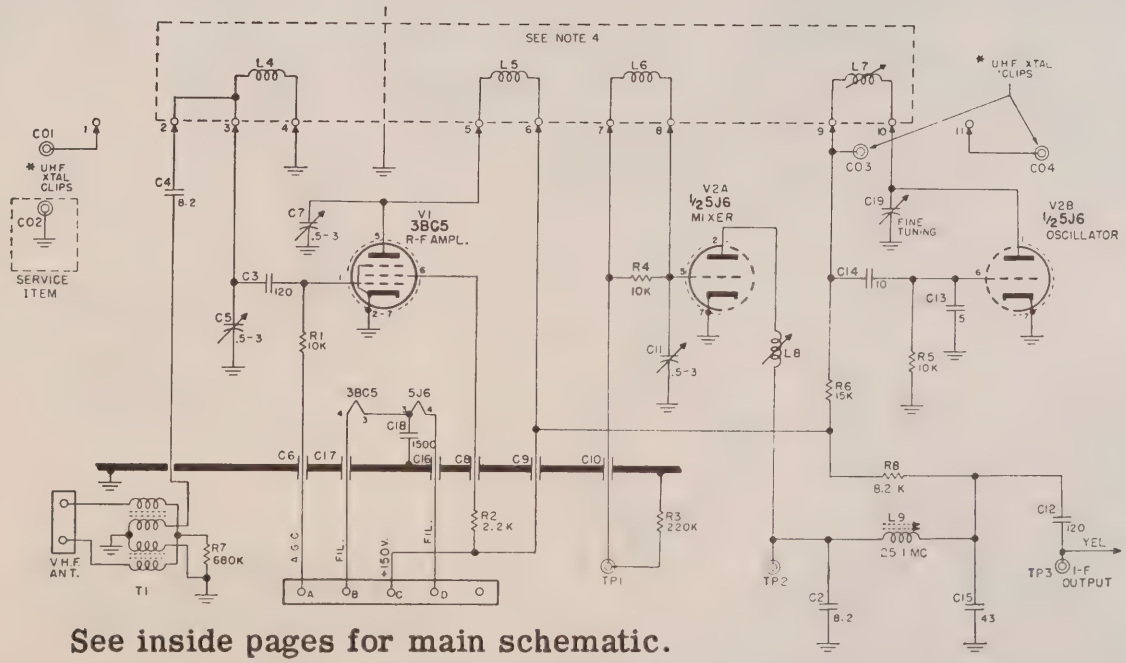
CHASSIS BOTTOM - RESISTOR IDENTIFICATION (R102 THRU R206)

The PHOTOFACT Servicer

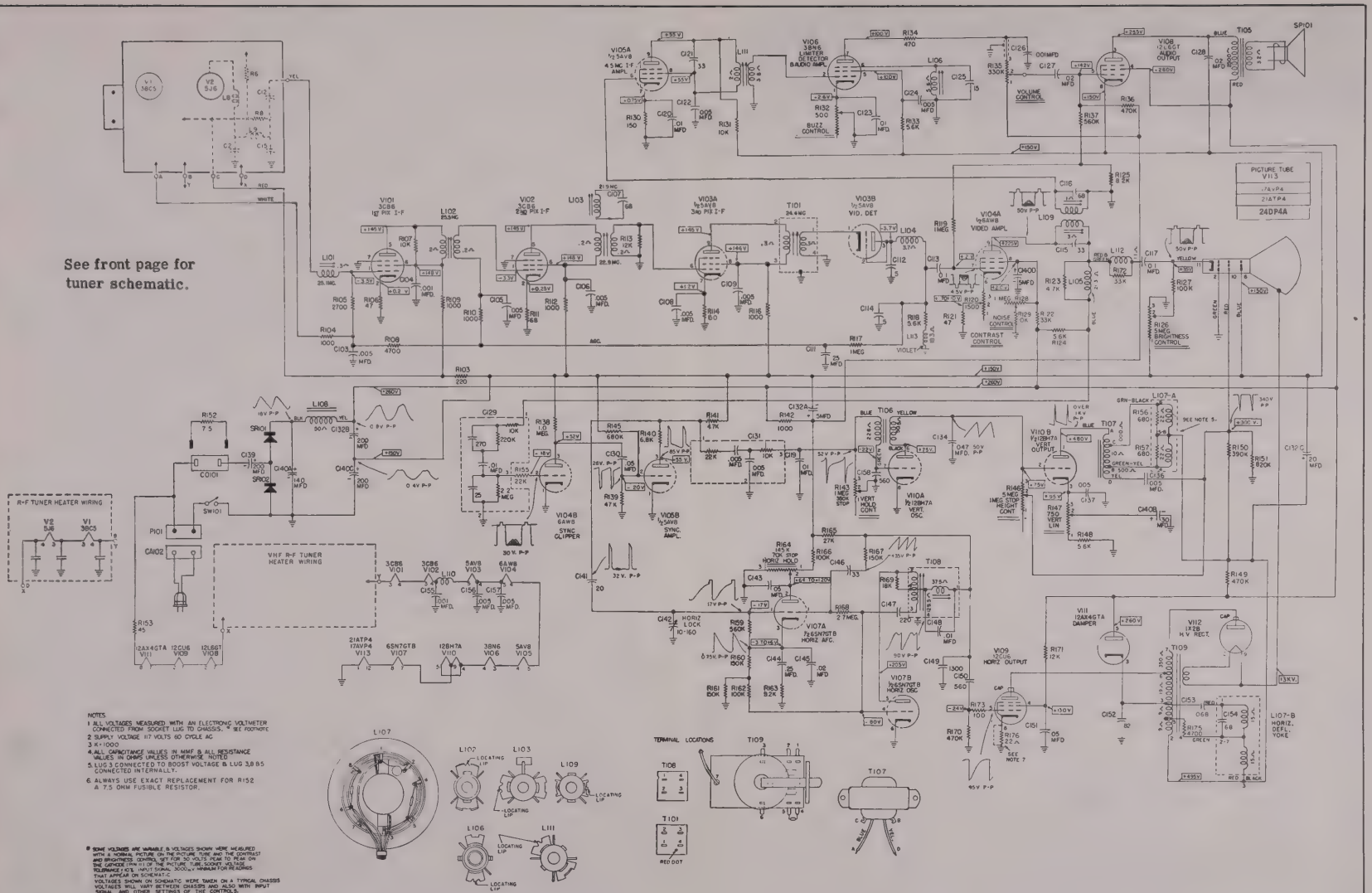
Set 382
Vol. 39

★ *Published for all users of Howard W. Sams' Photofact Folders* ★ Dec. 1, 1957

The service information in this Servicer provides data on models which we have been unable to present in PHOTOFACT Folders. The receivers are not in current production; a requirement for PHOTOFACT coverage, and we are therefore presenting schematics and supplementary data that will be of assistance when servicing these models.



See inside pages for main schematic.


See front page for tuner schematic.
R-F TUNER HEATER WIRING
VHF R-F TUNER HEATER WIRING
NOTES
1 ALL VOLTAGES MEASURED WITH AN ELECTRONIC VOLTMETER CONNECTED FROM SOCKET LUG TO CHASSIS. * SEE FOOTNOTE
2 SUPPLY VOLTAGE 117 VOLTS 60 CYCLE AC
3 K=1000
4 ALL CAPACITANCE VALUES IN MMF & ALL RESISTANCE VALUES IN OHMS UNLESS OTHERWISE NOTED
5 LUG 3 CONNECTED TO BOOST VOLTAGE & LUG 3,8 B5 CONNECTED INTERNALLY.
6 ALWAYS USE EXACT REPLACEMENT FOR R152 A 7.5 OHM FUSIBLE RESISTOR.
* SOME VOLTAGES ARE VARIABLE & VOLTAGES SHOWN WERE MEASURED WITH A NORMAL PICTURE ON THE PICTURE TUBE AND THE CONTRAST (BRIGHTNESS) CONTROL SET FOR 50 VOLTS P.P.M.M. TO PEAK ON THE CATHODE (PIN #1) OF THE PICTURE TUBE SOCKET. VOLTAGE TOLERANCE ± 10%. INPUT SIGNAL 300 μV MINIMUM FOR READINGS THAT APPEAR ON SCHEMATIC.
VOLTAGES SHOWN ON SCHEMATIC WERE TAKEN ON A TYPICAL CHASSIS VOLTAGES WILL VARY BETWEEN CHASSIS AND ALSO WITH INPUT SIGNAL AND EITHER SETTINGS OF THE CONTROLS.
TERMINAL LOCATIONS
PICTURE TUBE V113
17AVP4
21ATP4
24D94A

AIRLINE MODELS GSE-4004B, GSE-4006B, GSE-4017B, GSE-5008B, GSE-5009A

Schematic Diagram Courtesy of Montgomery Ward & Co.

SERVICE HINTS

The following Service Hints are brought to you thru the courtesy of Sylvania Electric Products, Inc.

Ch. 1-533-1, -2, -5 (Photofact Set 319-13)
1-533-3, -4, -7, -8, -9 (Photofact Set 352-16)

Vertical Foldover

A soft horizontal output tube (6CD6 or 6DN6) may affect the bias on the vertical output tube (6W6) resulting in vertical foldover.

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Ch. 1-521 Series (Photofact Set 284-14)
1-532 Series (Photofact Sets 328-11, 341-15)
1-533 Series (Photofact Sets 319-13, 352-16)

Horizontal Instability

Care must be exercised in the use of extension cables when bench testing the chassis listed above. The correct yoke must be used because the unused terminals of the yoke socket are used as tie points. Extension cables may introduce unwanted radiation into the noise inverter causing poor horizontal sync stability.

* * * * *

The following Service Hints are brought to you thru the courtesy of the Philco Corp.

Model T-7 (Photofact Set 347-11)

Distortion

If low level distortion is encountered, a possible cause may be a high resistance solder connection between resistor R22 and ground. To check this, connect a voltmeter between ground and the ground end of the resistor. If a voltage is indicated, resolder the connection. Distortion may also be caused by weak batteries since the receiver will operate from battery voltage as low as 2 volts.

White Vertical Curtains

A condition of white curtains may be encountered on the right hand side of the raster on some 7L70 chassis. When operating at a low contrast setting. The number of lines seen (one to three) vary in receivers and also the setting of the horizontal and the width coil.

This condition is caused when the damper tube current drops below cut-off during the horizontal output tube conduction time. To remove this effect add a 56K 2 Watt resistor from the boost voltage point to the B+ point at the damper plate. This resistor is wired directly across capacitor C87 (.068 mfd). In addition, connect a 2.2 meg 1/2 Watt resistor between pins 5 & 8 of the horizontal output tube V15 (grid to ground).

While the changes made above normally will clear this condition up, stubborn cases may necessitate adding a .0022 mfd 400V screen by-pass capacitor from pin 4 to ground on the horizontal output tube. Additional drive may also be obtained by decreasing capacitor C82 from 390 mmf to 270 mmf.

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 14 IN SET 369

	Motorola Models Y14P10-1, Y14P10-2, Y14P11-1, Y14P11-2, 14P10-1, 14P10-2, 14P11-1, 14P11-2 (Ch. TS-425, Y) were covered in Photofact Folder 14 — Set 369. Models Y14P10-1A, Y14P10-2A, Y14P11-1A, Y14P11-2A, 14P10-1A, 14P10-2A, 14P11-1A, 14P11-2A (Ch. WTS-425, Y) are added, along with late production changes with the publication of this bulletin.
TS-425A-01	TO IMPROVE TUNER OSCILLATOR STABILITY A new cement is now used which prevents movement of the tuner oscillator coils.
TS-425A-02	NEW HIGH VOLTAGE RECTIFIER TUBE V15 (high voltage rectifier) is changed from 1X2B to 3A2. A partial schematic showing the new circuit is given in Fig. 1.
TS-425A-03	TO PREVENT HORIZONTAL RASTER DISTORTION The physical location of L27 (filter choke) and T1 (vertical output transformer) are interchanged.
TS-425A-04	COMPONENT CHANGE R94 is increased from 20Ω, 5%, 10Watt to 25Ω, 5%, 15Watt, (Part #17K742729).
TS-425A-05	TO REDUCE CORONA SPRAY AT SECOND ANODE CONNECTOR A new second anode clip and lead assembly (part #42A744694) including rubber cup (part #14B744695) is used.
TS-425A-06	TO REDUCE ADJUSTMENT OF QUADRATURE COIL C44 is increased from 1500MMF to 2000MMF. A 220K, ½ Watt resistor is added from pins 2 of V8A (sound IF) to ground. TO REDUCE CORONA NEAR FILTER CHOKE AND SECOND ANODE LEAD Vinyl plastic tape is added to the corner of L27 (filter choke) nearest the second anode lead.
TS-425A-07	TO ELIMINATE 60 CYCLE INTERFERENCE IN HORIZONTAL SWEEP A 1000MMF @ 500V ceramic disc capacitor is added in parallel with M1 (silicon rectifier).
TS-425A-08	COMPONENT CHANGE C1A, B, C and C2 are replaced with one 4 section electrolytic capacitor (Part #23B744100).
TS-425A-09	TO IMPROVE VERTICAL SWEEP A 3300MMF @ 500V ceramic disc capacitor is added from the junction of R63 and C62 to ground. A 2.2Meg, ½ Watt resistor is added in parallel with R2 (vertical hold).

MOTOROLA MODELS Y14P10-1, -1A, Y14P10-2, -2A, Y14P11-1, -1A, Y14P11-2, -2A, 14P10-1, -1A, 14P10-2, -2A, 14P11-1, -1A, 14P11-2, -2A (Ch. TS-425, Y, WTS-425, Y)

(Continued on reverse side)

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PRODUCTION CHANGES
BULLETIN 195

PRODUCTION CHANGES
BULLETIN 195

FOLDER 4

TS-425A-10	VOLTAGE RATING INCREASED The voltage rating of C69 is increased from 1000V to 2000V. VHF/UHF TUNER ANTENNA INPUTS CHANGED The VHF and UHF tuner antenna inputs are changed. Partial schematics showing the new circuits are given in Fig. 2 and 3. The VHF tuner part number becomes VTT-93 and the UHF tuner part number becomes VTT-93Y.

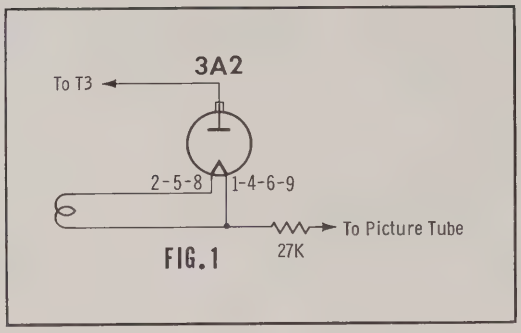


FIG. 1

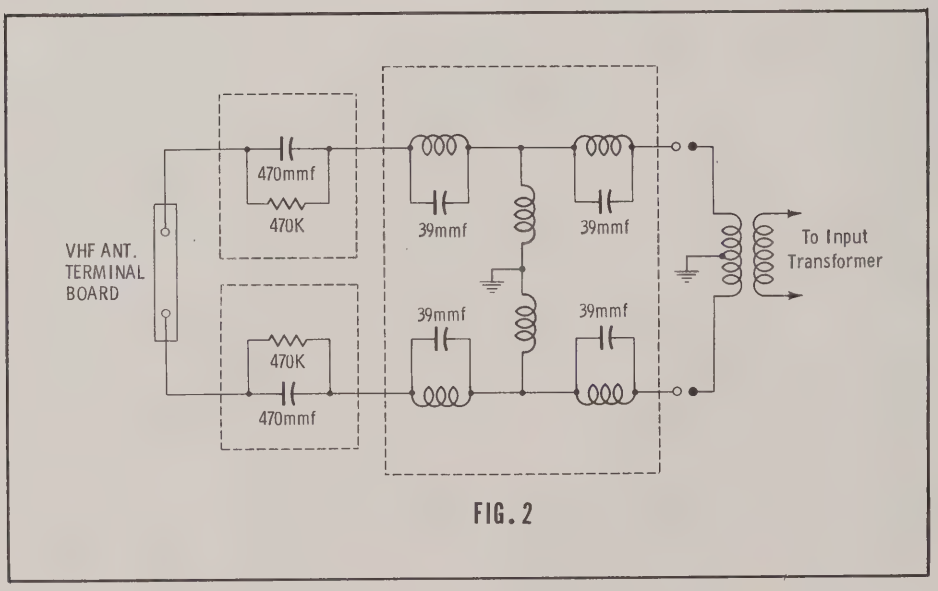


FIG. 2

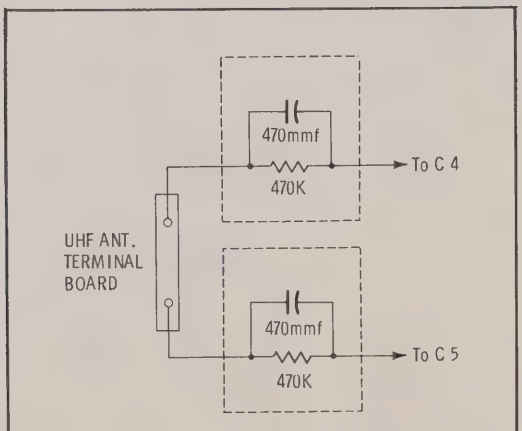
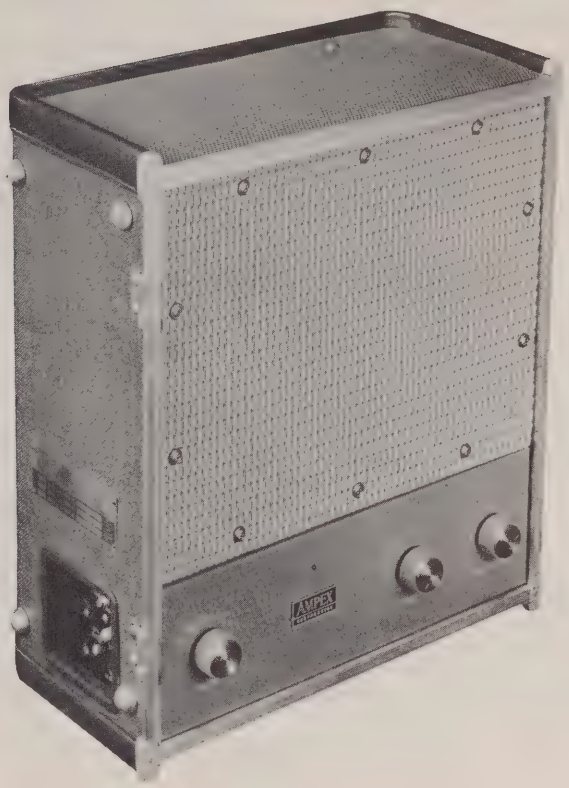


FIG. 3

RETMA MEMBER
RADIO-ELECTRONICS-TELEVISION MANUFACTURERS ASSOCIATION

AMPEX
MODELS A121, A122, A124, A621, A692



AMPEX
MODELS A121, A122, A124, A621, A692

GENERAL INFORMATION

The Ampex Models A121, A122 and A124 are designed for Stereophonic tapes. All models will record on a half track basis and reproduce half track or full track recordings.

Features on all models include two speed operation, a tape positioning indicator, a positive safety record button, a record level indicator, mixer-fader controls for the microphone and radio or phonograph, and separate erase, record, and reproduce magnetic heads. Fast winding in either the forward or reverse direction is activated by a single lever-type control.

Inputs are provided on all models so that the output of a radio tuner and/or a record changer may be either recorded or routed directly to the accessory amplifier/loudspeaker combination.

The stereophonic reproduce head on the A121, A122, and A124 models — is composed of two separate reproduce heads, one mounted above the other in one stack with gaps in line; complete electrical and magnetic isolation between the two heads prevents cross talk.

The Ampex Models A121, A122 and A124 can be used with amplifier/loudspeaker combinations A621 and A692. The Models A621 and A692 are covered in this manual.

The Ampex Models A121, A122 and A124 use 110-120 volt, 60 cycle, A-C power. (Recorders for use with 50 cycle A-C power are available).

MANUFACTURED BY:

AMPEX CORPORATION
934 CHARTER STREET
REDWOOD CITY, CALIFORNIA

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3924 MEADE ST.
DENVER, COLORADO

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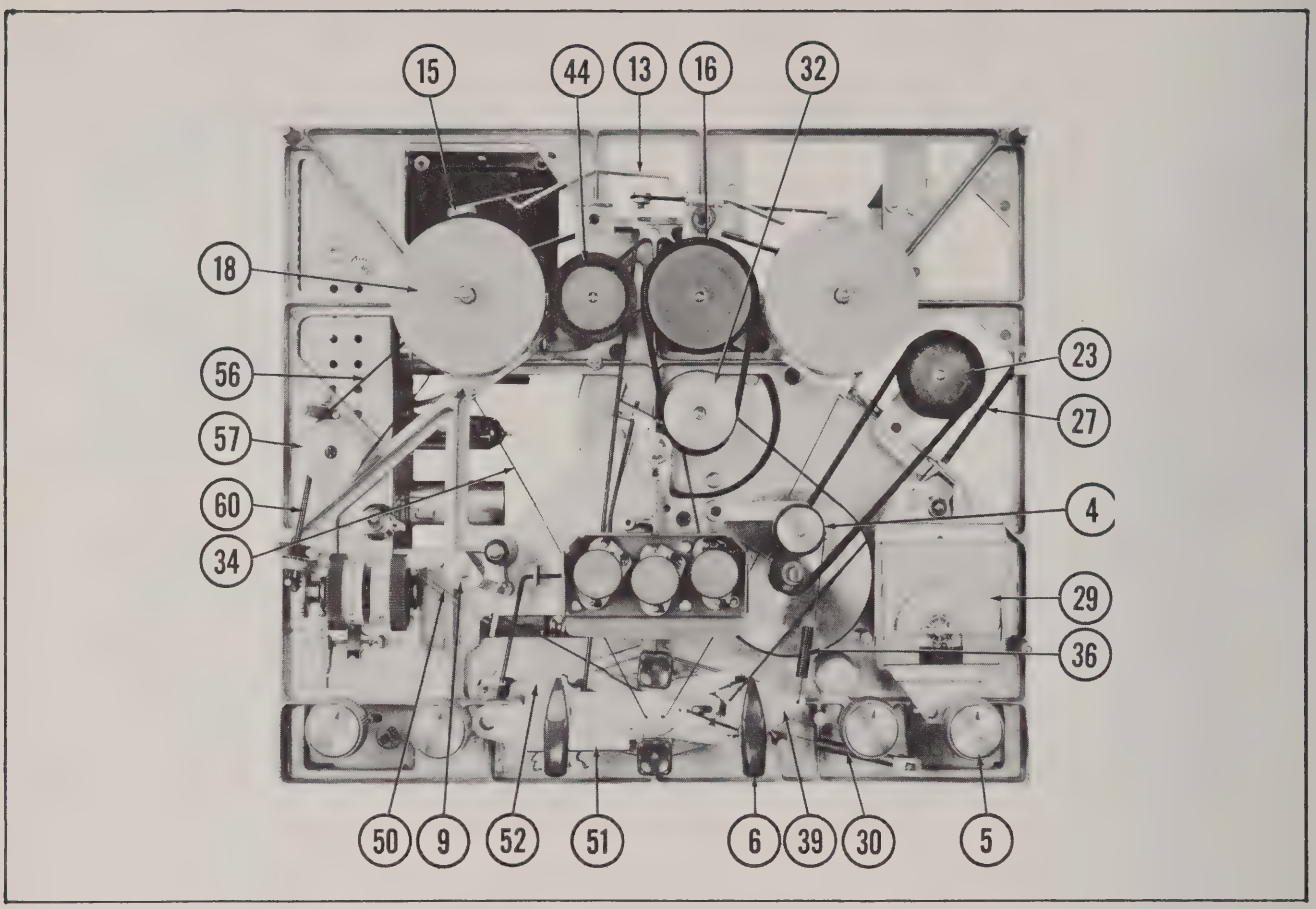

FIGURE 1

SPECIFICATIONS

Tape Width: 1/4 inch.

Tape Reels: 3, 4, 5, or 7 inch RETMA type.

Tape Speed: 7 1/2 and 3 3/4 ips (inches per second).

Frequency Response: 7 1/2 ips: 30 to 15,000 cps ± 2 db 50 to 10,000 cps 3 3/4 ips: 30 to 7,500 cps ± 2 db 50 to 5,000 cps.

Flutter And "Wow": 7 1/2 ips: Under 0.25% rms 3 3/4 ips: Under 0.3% rms.

Fast Winding Time: Less than 90 seconds for a full 1200 foot reel in either the rewind or forward direction.

Record Inputs: Microphone: High Impedance Input: Two high impedance line inputs (Thru and Rec.) are provided. An input of 0.75 volts rms is necessary for recording at program level.

Head Assemblies: A121, A122, A124: Half track erase, and half track record heads. In line stereophonic reproduce head.

Reproduce Output: Will deliver more than 0.75 volts rms (from tape recorded at programs level) into a high impedance load of 100,000 ohms or more.

INSTALLATION AND OPERATION

Connecting Ampex Amplifier To Reproducer —

When Ampex microphone and amplifier — loudspeaker combinations are used, all necessary interconnecting cables are provided. The interconnecting will consist simply of plugging the microphone cable into the microphone input receptacle, and the amplifier — loudspeaker cables(s) into the output connector(s). When the power cords are connected from the record/reproducer and the amplifier — loudspeaker combinations to a convenient power source, the equipment is ready for use.

Connecting Amplifier Other Than Ampex To Reproducer —

If accessory equipment other than Ampex is used it will be necessary for you to fabricate the interconnecting cables. Use the mating plugs provided and solder shielded cable to these plugs as illustrated in Fig. (2), following the recommendation of the manufacturer as to cable lengths.

NOTE: Use the shielded (metal shell) plug for the microphone cable.

Tape Threading —

1. Place a reel of tape on the left-hand turntable, and an empty reel on the right-hand turntable. Be sure that the pins around the base of each spindle engage corresponding slots on the reel hub.

2. Thread the tape as shown on front page, and make a full turn counter-clockwise around the hub of the empty reel. It is not necessary to anchor the tape in the slot on the reel hub.

FIGURE 2.CONNECTING CABLE TO PIN JACK

To Record —

1. Thread a reel of tape on the machine. It is not necessary to erase previously recorded tapes before re-using them. Any previous program on the tape will be erased as the new program is recorded.

2. Turn the selector switch to the "Monitor" position.

3. Using the knurled drums, set the tape position indicator dials to O.

4. Set the tape at which you wish to record by pushing the speed selector down for 3 3/4 inches per second or pulling it up for 7 1/2 inches per second.

5. Before starting to record use a test script or rehearsal music to set the microphone record level Adjust the Recording Volume — Microphone control so that the meter needle deflects to the end of the black (Normal) portion of its scale on the signal peaks.

6. Hold down the Press to record pushbutton and simultaneously turn the Play or Record lever clockwise until it locks in position. You are now recording on the tape at the preset level. If necessary, readjust the Recording Volume — Microphone control.

7. To stop recording and tape motion, press the stop pushbutton.

To Play Back —

1. Thread a previously recorded tape on the machine.

2. Depending upon the model of your recorder/reproducer, and the type of tape to be reproduced, turn the selector switch to its Tape, Single, or Stereo position.

CAUTION: When reproducing recorded tapes, never touch the Press To Record pushbutton.

3. Select the tape speed at which the recording was made by pushing the speed selector down for 3 3/4 inches per second or pulling it up for 7 1/2 inches per second.

4. Turn the Listening Volume control to 7 on its dial.

5. Turn the Play Or Record lever in a clockwise direction until it locks in position.

6. Single Channel Tapes — Adjust the volume control on the associated power amplifiers(S) until the desired sound level is achieved.

7. Stereophonic Tapes — Balance the output of the power amplifiers and make subsequent volume adjustment at the Listening Volume control on the recorder/reproducer. For best results adjust the power amplifier volume so that it is not necessary to drop the Listening Volume control below 5 on its dial.

8. To stop the reproducing function and tape motion, press the Stop pushbutton.

Fast Rewind —

1. Turn the Fast Winding lever counter-clockwise until it locks in position.

2. To stop tape motion press Stop pushbutton.

Fast Forward —

1. Turn the Fast Winding lever clockwise until it locks in position.

2. To stop tape motion press Stop pushbutton.

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Erasing —

1. To erase a previously recorded tape without recording a new program on it, turn Recording Volume to zero (0), and run the tape through in the "Record" mode.

TAPE TRANSPORT ASSEMBLY.

The tape transport mechanism incorporates a single-speed induction motor and a system of mechanical linkage, pulleys, and belts to drive the capstan and the turntables. Three modes of tape motion — Play or Record, Fast Winding Forward, and Fast Winding Reverse — are determined by two controls on the front panel of the transport.

Tape Motion —

Tape motion in the record or reproduce modes is controlled by the capstan idler (4) moving against the capstan (38) and the tape running between these two components; tape speed is determined solely by the rate of rotation of the capstan.

Standby Mode —

Power is applied to the drive motor whenever the Selector switch on the front panel is turned from its "Off" position. The capstan immediately starts to rotate, being driven by a belt between the drive motor pulley and the capstan flywheel (38). Capstan speed is determined by the speed selector, which simply positions the drive belt (33) at a point of small or large circumference on the drive motor pulley (32). A second belt (16) from the motor pulley drives a fast winding pulley, and a third belt (24) from the capstan flywheel (38) drives the takeup pulley; neither of these pulleys has any effect in standby as neither is mechanically engaged.

With the capstan in motion the tape will accelerate to full speed almost instantly when the Play Or Record control is operated. A fan mounted on the lower shaft of the drive motor provides forced draft cooling to all components whenever power is applied to the recorder/reproducer.

Play Or Record Mode —

When the Play Or Record control is operated the following mechanical actions occur in sequences.

1. The tape holdback moves against the tape guide, providing holdback tension for the tape.

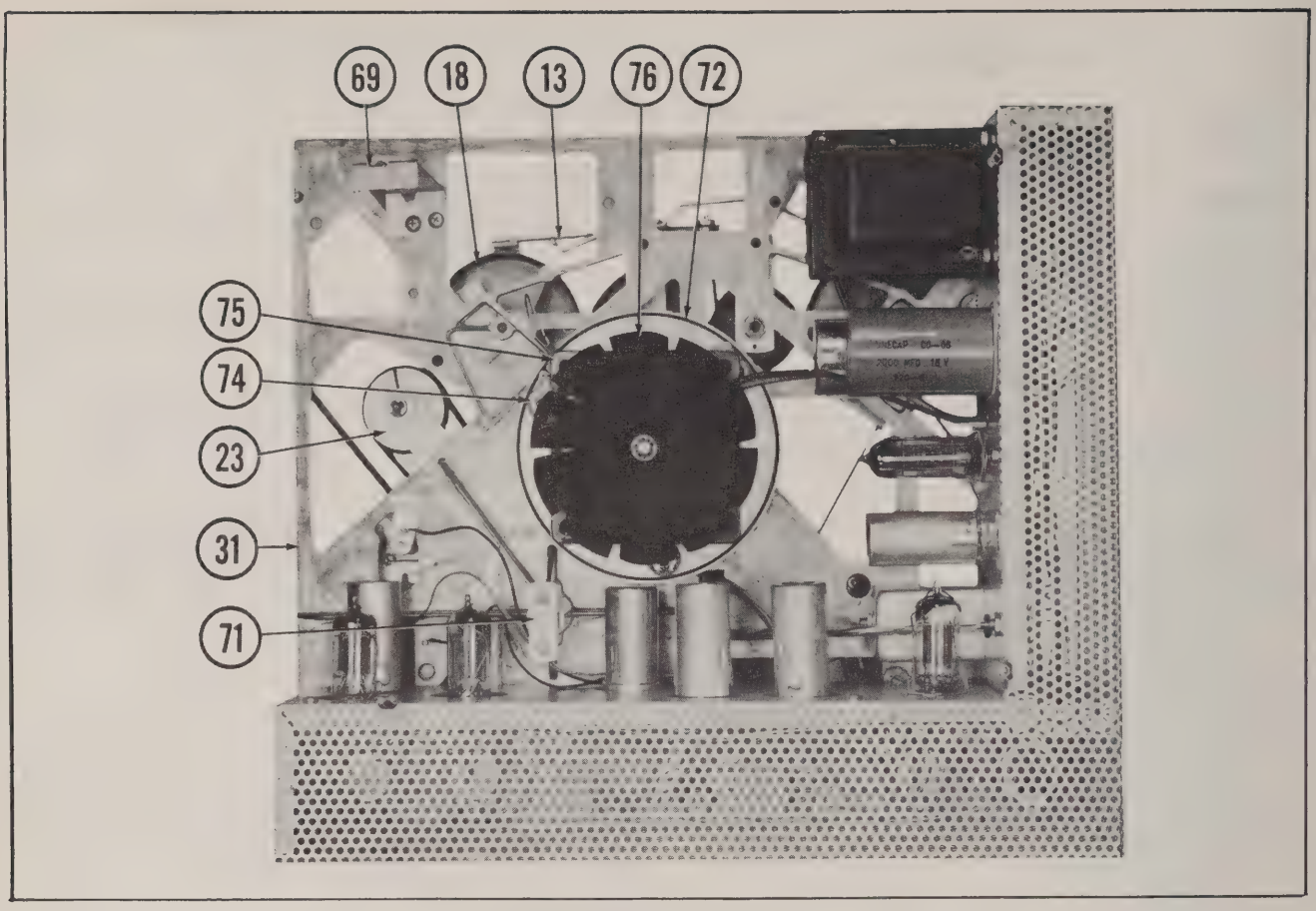

FIGURE 3

2. The rubber-tired takeup pulley moves against the takeup turntable, and starts rotation of the turntable.

3. The capstan idler moves against the capstan, placing the tape in motion at the speed selected.

4. The rewind and takeup brakes are pulled from contact with respective turntables.

The tape is thus pulled across the head assembly by the capstan, being held under tension by the tape holdback, and wound on the takeup reel.

When the stop button is pressed the tape holdback, capstan idler, and takeup pulley are released and spring action returns them to their standby positions. At the same time the self energizing brakes on both the rewind and takeup turntable are activated and the rewind brake applies braking force on its turntable, bringing it to a quick stop.

Fast Winding Forward –

When the Fast Winding control is moved in a clockwise rotation the following mechanical actions occur in sequence:

1. The fast winding brake engages the rewind turntable, providing holdback tension.

2. The fast winding pulley moves toward the takeup turntable, its rubber belt (16) engages the pulley and the turntable, thus providing drive for the turntable in a fast counterclockwise rotation.

3. The normal rewind and takeup brakes are pulled from contact with their respective turntables.

Tape is thus pulled from the rewind reel by the takeup reel, with holdback tension supplied by the fast winding brake at the rewind turntable.

When the stop button is pressed the fast winding pulley is released and returns to its standby position. The fast winding brake is deactivated; and the normal brakes are activated and braking force is again applied to the rewind turntable.

Fast Winding Reverse –

When the Fast Winding control is moved in a counterclockwise direction the following mechanical actions occur in sequence:

1. The fast winding brake (13) is applied to the takeup turntable, providing holdback tension.

2. The fast winding pulley is forced against a rubber tired idler (44) which in turn is forced against the rewind turntable (18). The belt (16) on the pulley; engaged between the pulley and the idler (44), drives the idler. The idler in turn drives the rewind turntable (18) in a clockwise direction.

3. The normal rewind and takeup brakes are pulled from contact with their respective turntables.

Thus tape is pulled from the takeup reel, by the rewind with holdback tension supplied by the fast winding brake (13).

When the "Stop" button is pressed the fast winding pulley is released and returns to its standby position. The fast winding brake is deactivated, and the normal brakes are activated. In this case braking force is applied to the takeup turntable.

Brake Operation –

The braking force is always applied to the trailing turntable (the turntable from which tape is being pulled), with the normal brakes in braking position only after the "Stop" button is pressed. In the play fast winding forward modes of tape motion, both turntables are rotating in a counterclockwise direction. While the controls are in their operating positions both turntable brakes are held from contact with their respective turntables, but when the "Stop" button is pressed, both are activated. The takeup brake in this instance supplies little or no braking force, as it is mechanically incapable of moving with the rotation of its turntable. However, the rewind brake can and does move with the rotation of its turntable, and as it does so it gradually increases the braking force applied until the turntable is brought to a stop. Brake movement is mechanically limited to prevent tape breakage which would occur if the stopping action were too sudden.

The action of the brakes in the fast winding reverse mode is exactly the opposite of that described in the foregoing paragraph. Now both turntables are rotating clockwise, and when the "Stop" button is pressed the brake on the takeup turntable can move with the direction of rotation and supply the braking action.

The fast winding brake is simply a holdback device which is mechanically held against the appropriate (trailing) turntable during actual tape motion in the fast winding modes. This ensures a tight wrap of the tape on the reel of the takeup turntable.

Tape Indicator Operation –

The tape position indicator is driven through a series of gears by a belt (56) from the rewind turntable. This belt runs from a pulley at the base of the turntable to a pulley that is directly coupled to one set of mating gears. These gears are mechanically linked through an extension arm to a second set of mating gears which in turn drive the indicator.

Two dials are provided – one reading in units from 0 to 100 and one reading in hundreds of units from 0 to 20. The unit dial rotates whenever the supply turntable is rotating, but the hundreds units dial is locked by a spring loaded arm. As the units dial passes through its 95-0 indicator, the spring loaded arm is raised by a cam on the inner shaft of the units dial, allowing the hundreds dial to advance one space.

MAINTENANCE

Routine Cleaning –

1. Most tape manufacturers lubricate their tapes, and this lubricant (plus oxide) from the tape will gradually be deposited on the components in the tape threading path. Therefore those components must be cleaned occasionally to prevent both the loss of positive drive at the capstan and flutter and "Wow".

To clean the head assembly use a solution of Xylene and 0.1% Aerosol (Ampex Catalog No. FP-7). A cotton swab on a stick can be used to accomplish this cleaning.

CAUTION: Do not use any other solvent on the head assembly, as some will damage the material which binds the heads laminations together. Also do not use any metallic device which will mar the laminations.

2. Use a clean, lintless, cloth mositened with denatured alcohol to clean the capstan, capstan idler, and tape guides.

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Demagnetizing The Heads –

The record and reproduce heads may occasionally acquire a degree of permanent magnetization, which will result in an increase of 5 to 10 db in noise level, distortion of any recorded signal, and a gradual erasure of high frequencies on any recorded tape which passes over them. These heads may be easily demagnetized through the use of an Ampex head demagnetizer, Catalog No. 704.

1. Remove the plastic head cover (by pressing in on each end to release the tab) and the metal shield which covers the head assembly.

2. Turn the Selector switch to its "Off" position.

3. Cover the tips of the demagnetizer with masking tape, transparent tape, etc. This will prevent scratching the heads. Latest versions of the demagnetizer are provided with the tips already covered.

4. Connect the demagnetizer to a source of 110-120 volt, a-c, power.

5. Bring the tips of the demagnetizer in contact with the record head so that the tips straddle the gap in the center of the head. Run the tips up and down the head several times, and then slowly withdraw the demagnetizer. The slow withdrawal is required for through demagnetization.

6. Repeat step 5 at the reproduce head.

ELECTRONIC ALIGNMENT

Equipment Required –

1. Ampex Standard Alignment Tape, Catalog No. 5563B.

2. AC Vacuum Tube Voltmeter able to indicate rms voltages of .004 or less.

3. Audio Oscillator with stable output from 50 cps to 10KC.

4. Blank tape.

Reproduce Circuit Preliminary Steps –

1. Remove the recorder/reproducer from the case or cabinet by carefully inverting the recorder, removing the holding screws, and lifting the case or cabinet off the mechanical assembly. Be sure the plastic head cover is removed before inverting the equipment.

2. Thread blank tape on the tape transport.

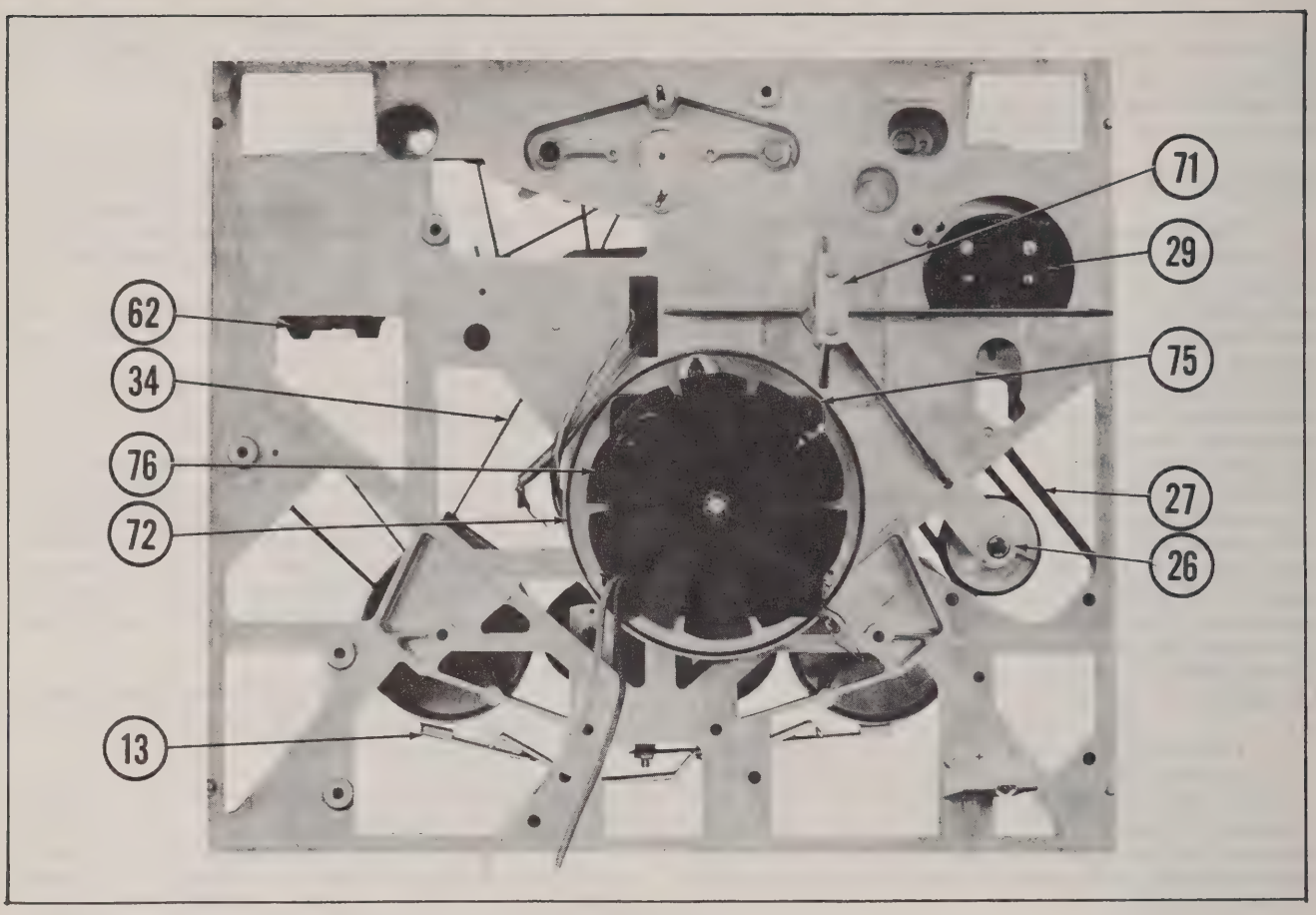

FIGURE 4

3. Connect the A-C power.

4. Place the selector switch in its tape position (Stereo position on stereophonic models).

5. Start tape motion.

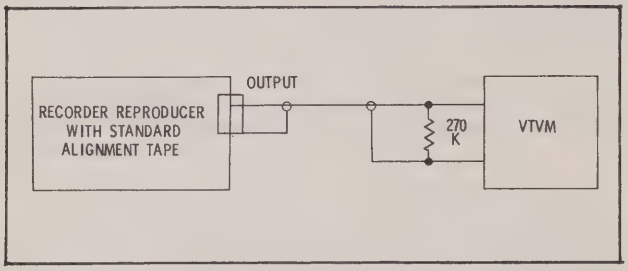

FIG. 5 CIRCUIT FOR ALIGNING REPRODUCE

Head Height –

1. Visually inspect the position of the tape on the three heads (erase head, record head, and reproduce head from left to right when facing the machine) counting the head laminations which are visible above and below the tape. The number above should equal the number below.

2. If it is necessary to adjust the height of any head start with the screw immediately in front of that head and count the number of turns or fractions of a turn which are necessary to make the tape track in the middle of the head. If the front screw has to be turned more than 1/4 turn, adjust the screw immediately opposite it (in back of the head) the same amount and re-check the position of the tape.

3. Sight along the reproduce head (37) to the capstan (38). They should be parallel. If not, readjust the head height screws and recheck the head height. Then sight along the record head to the reproduce head and adjust the record head, if necessary to parallel the reproduce head. Finally check the erase head against the record head.

Reproduce Head Azimuth Alignment –

1. Thread the standard alignment tape on the tape transport.

2. Connect the VTVM to the Output jack (Left Output on stereophonic models). Connect a 270,000 ohm load across the VTVM.

3. Turn the Listening Volume control to its maximum (clockwise) position.

4. Start the standard tape in motion in the reproduce (Play) mode at a tape speed of 7.5 ips.

5. The first tone on the tape is a 10KC tone used for adjusting the azimuth of the reproduce head. Adjust the screw to the right of the reproduce head for a maximum indication on the VTVM. Note that if the head azimuth is out of alignment by a large amount several minor peaks will be observed on both sides of the maximum; however the proper setting is clearly 15 to 20 db higher.

Record Circuit Preliminary Steps –

1. Thread blank tape on the recorder reproducer.

2. Connect the audio oscillator to the Line In-Rec jack. Set the oscillator at an output level of from 1 to 2 volts at 10KC.

3. Connect the VTVM to the Left Output jack. This circuit can either be the one used in the reproduce circuit checks as shown in Fig. (7), or can employ a bias trap circuit to eliminate the 100KC bias signal picked up by the reproducer head during recording as shown in Fig. (8).

When alignment procedures differ (depending upon the circuit used) both are described. In general, it will be found that alignment is easier if the bias trap is employed.

4. Place the selector switch in its "Tape" position (Single position on Stereophonic Models).

5. Reproduce level must be set as in step 3 or step 7 of the reproduce circuit alignment (-12 db when reproducing the 250 cycle tone recorded at -10 db on a standard alignment tape). Maintain this setting throughout the procedure.

6. Place the speed selector in its 7 1/2 ips position.

7. Start the tape in motion in the record mode.

NOTE: If the height of the record head has not been checked and, if necessary, adjusted, do so before proceeding.

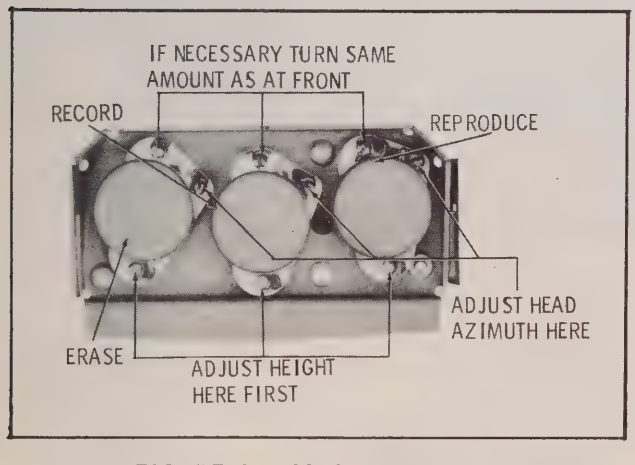

FIGURE 6 HEAD ADJUSTMENTS

Record Head Azimuth Alignment —

With bias trap connection to VTVM.

1. Set the audio oscillator frequency to 10KC.

2. Adjust the "Recording Volume Radio/ Phono" control for an indication of -22 db (.062 volts rms) on the VTVM.

3. Adjust the record head azimuth screw for a maximum indication on the VTVM.

4. Stop tape motion.

Without Bias Trap Connection —

1. Place a .01 or .02 uf capacitor across the VTVM.

2. Set the audio oscillator frequency to 10KC.

3. Start the blank tape in motion at 7.5 ips in the record mode and adjust the "Recording Volume — Radio/ Phono" control so that the needle of the "Record" meter on the recorder/ reproducer falls on the letter "A" in the word "Normal" on its scale.

4. Adjust the record azimuth screw Fig. (7) for a maximum indication on the VTVM.

5. Stop tape motion and remove the capacitor installed in step 1.

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Record Bias Adjustments —

1. Change the audio oscillator frequency to 500 cps.

2. Start the blank tape in motion at 7 1/2 ips in the record mode.

3. Adjust the "Recording Volume-Radio/ Phono" control for an indication approximately — 2 db (.62 volts rms) on the VTVM.

4. Adjust the bias control (see amplifier photos in the rear of this manual) for a maximum reading on the VTVM. It is not necessary to stop tape motion.

Record Meter Calibration —

1. Change the audio oscillator frequency to 250 cps.

2. If necessary, adjust the "Recording Volume — Radio/ Phono" control for an indication of - 2 db (.62 volts rms) on the VTVM.

3. Adjust the meter calibration control (see amplifiers photos in the rear of this manual) until the needle of the "Record Meter" on the record/ reproducer rests on the line between the "Normal" (back) and High (gray) portions of its scale. Stop tape motion and remove the VTVM.

Checking Noise Balance —

1. Connect an amplifier/loudspeaker combination to the "Left Output" jack. Turn up amplifier volume control to full volume. Turn both "Recording Volume" controls to zero.

2. Start the blank tape in motion at 7.5 ips in the record mode.

3. Adjust the "Noise Balance" control (R5) for a minimum of popping or cracking as heard from the amplifier/ loudspeaker.

4. Stop tape motion and remove the amplifier/ loudspeaker connection.

Overall Response —

With bias trap connection to VTVM.

1. Change the audio oscillator frequency to 250 cycles.

2. Reconnect the VTVM to the "Left Output" jack.

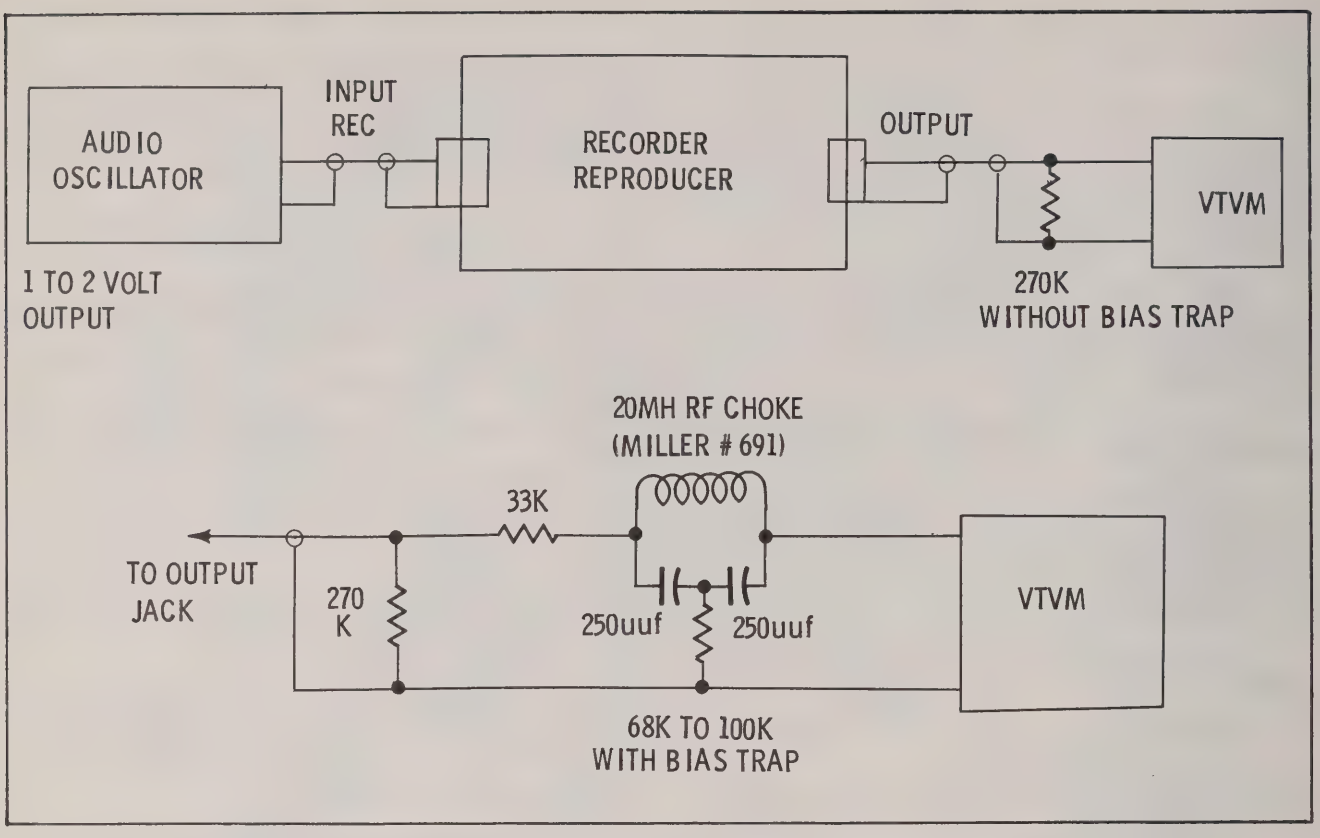

FIG. 7 OPTIONAL CIRCUITS FOR ALIGNING RECORD SECTION.

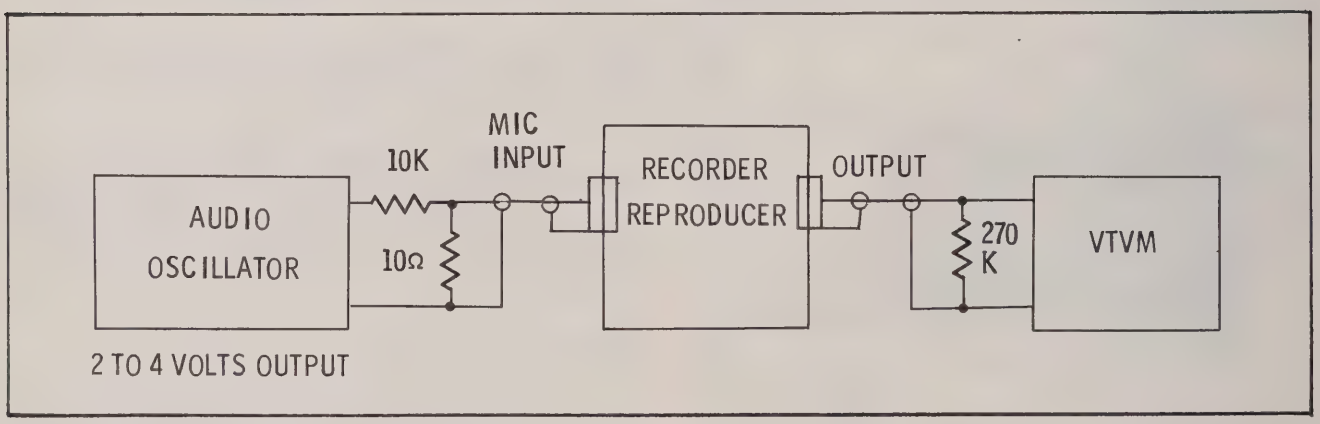

FIG. 8 CIRCUIT FOR CHECKING MICROPHONE PRE-AMPLIFIER.

3. Start the blank tape in motion at 7.5 ips in the record mode.

4. Adjust the "Recording Volume — Radio/ Phono" control for a — 22 db (.062 volts rms) indication on the VTVM. Maintain this setting.

NOTE: The overall response check must be made at this level (-20 db from normal operating level) to avoid tape saturation effect at high frequencies.

5. Vary the audio oscillator between 50 cps and 10KC noting the indications on the VTVM. Response should be within ± 2 db from the -22 db 250-cps reference level at frequencies from 50 cps to 5KC.

Without Bias Trap Connection To VTVM.

1. Connect the VTVM across the audio oscillator.

2. Set the audio oscillator for an output level of 5 volts rms at 250 - cps.

3. Start the blank tape in motion at 7.5 ips in the record mode and adjust the "Recording Volume — Radio/ Phono" control so that the needle of the "Record Meter" on the recorder/ reproducer falls on the line between the "Normal" (black) and High (gray) portions of its scale. Maintain this setting.

4. Reduce the oscillator output to a level of 0.5 volt rms (-4 db) as indicated on the VTVM. This corresponds to a -22 db output.

5. Vary the oscillator frequency between 50 cps and 10KC, recording each frequency for at least 10 seconds.

6. Stop the tape and rewind it to the start of the series of tones recorded in step 5.

7. Reconnect the VTVM to the "Left Output" jack, using the original circuit.

8. Start the tape in motion in the reproduce (playback) mode at 7.5 ips. Note the indications on the VTVM for each tone. Response should be ± 2 db from the -22 db, 250 cycle, reference level.

9. Stop tape motion and remove the audio oscillator.

NOTE: Overall response at the 3.75 ips tape speed can be checked using this procedure. Response should be ± 2 db from the -22 db, 250 cycle, reference level at frequencies from 50 cps to 5KC.

Overall Noise —

1. Turn both "Recording Volume" controls to their maximum counterclockwise position (minimum volume).

2. Start the tape in motion at 7.5 ips in the record mode and record a section of tape with no input signal. Note that the tape is actually being erased so that overall noise will include the erase signal.

3. Stop tape motion and rewind the tape to the start of the section recorded in step 2.

4. Start the tape in motion at 7.5 ips in the reproduce (playback) mode and reproduce the erase section, noting the indication on the VTVM. The reading should be -46 db (.004 volt rms) or under.

5. Stop tape motion.

NOTE: Overall noise at the 3.75 ips speed can also be checked by following the above procedures, except using the 3.75 ips speed. Noise should be -41 db (.004 volt rms) or under.

Final Steps —

1. Remove the VTVM from the recorder/reproducer.

2. If the alignment check were normal, replace the recorder/reproducer in its case or cabinet by carefully inverting the recorder/reproducer and sliding the cabinet into position. If the alignment checks were not normal, proceed to Corrective Maintenance.

TAPE TRANSPORT PERFORMANCE CHECKS

The mechanical operation of the components of the tape transport is fixed within strict design specifications and there are no adjustments (this excludes the head assembly which is aligned during the electronic alignment procedure). However, a few simple checks should quickly determine that the transport is operating properly, or indicate that corrective maintenance is required.

Some of the performance checks outlined may be made using alternate methods, depending upon the test equipment available. For this reason the test equipment required is detailed at the start of each discussion.

Tape Speed —

Test Equipment — Electronic Frequency Counter

1. The most accurate method of measuring tape speed is to reproduce a tape precisely recorded at a frequency between 3,000 and 4,000 cps, using an electronic frequency counter to determine the reproduce frequency. A standard flutter tape recorded at 3,000 cps is an example of this type of tape.) Note that a tape recorded on the recorder/reproducer itself, and then reproduced, will not determine that the tape is moving at the correct speed.

2. An alternate method may be used if an electronic frequency counter is not available. An approximate indication of tape speed may be obtained by timing (with a stop watch) the number of seconds it takes for a measured length of tape to pass a given point on the transport. Measure the tape in multiples of 7.5 inches and play for a run of at least 1 minute.

NOTE: Human error, plus the tendency of stop watches is common usage to jump or lag as they are started, makes this an inaccurate method.

Tape Tension —

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Test Equipment - an accurate 0 to 8 ounce spring scale and a reel of blank tape.

1. Place a reel of blank tape on the supply turntable. Thread the tape between the tape holdback and guide, and over the head assembly, but not between the capstan and capstan idler.

2. Make a loop in the end of the tape by rolling it back over itself several times. Secure the loop with a piece of masking tape or some similar adhesive.

3. Place the hook on the spring scale through the loop, place the "Selector" switch in its "Monitor" position.

4. Turn the "Play" Or "Record" switch until it locks in its clockwise position.

5. Use the spring scale to pull the tape from the supply reel, noting the reading on the scale, which should be between 2 and 3 ounces while the tape is in steady motion. (See Trouble Chart).

Takeup Tension —

Test Equipment — An accurate 0 to 8 oz. spring scale. An empty tape reel with hub diameter of 2 inches. A length of string from 3 to 4 feet in length.

1. Place the empty reel on the takeup turntable.

2. Anchor the string on the reel and wrap it once or twice in a clockwise direction around the reel hub.

3. Tie a loop in the end of the string and place the hook on the string scale through the loop.

4. Place the Selector switch in its Monitor position. Turn the "Play" Or "Record" switch clockwise until it locks in position.

5. Let the spring scale follow slowly as the string is wound on the reel, taking the scale/reading. It should be approximately 3 ounce/inches. If not, see Trouble Chart.

NOTE: If the hub is 2 inches in diameter the spring scale will indicate directly in ounce/inches.

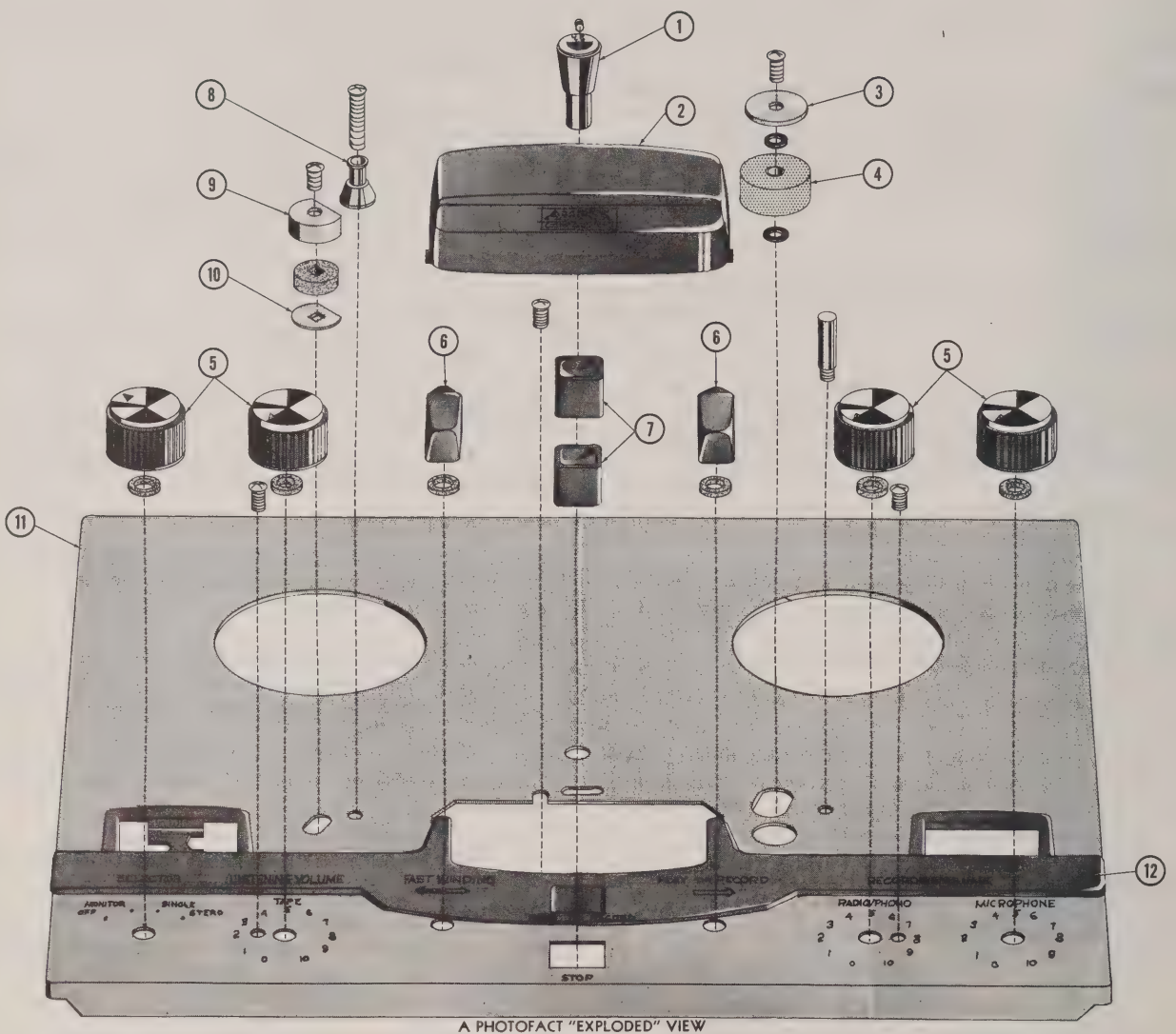

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FIGURE 9A. EXPLODED VIEW OF PARTS ABOVE MAIN ESCUTCHEON.

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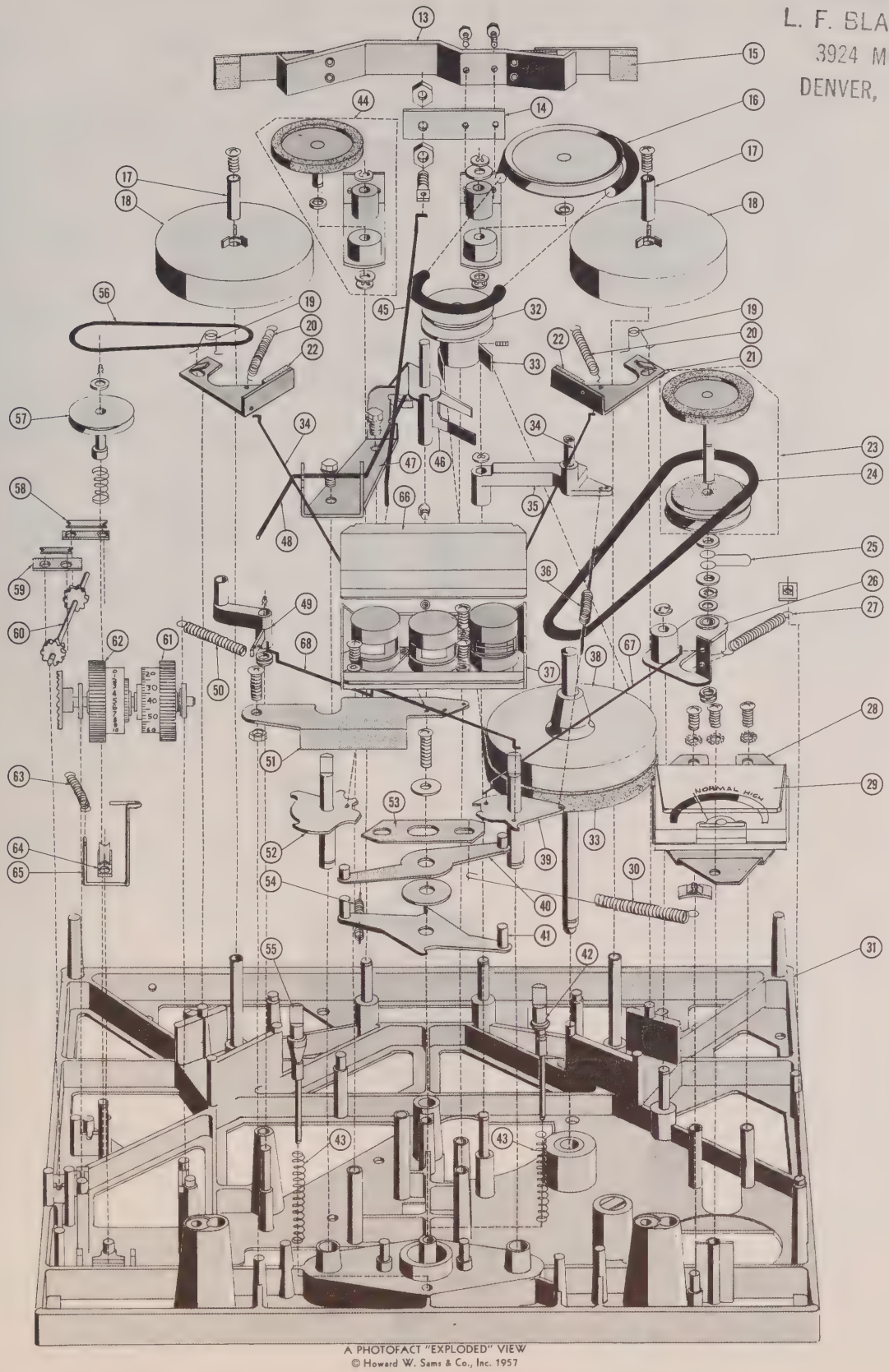

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FIGURE 9B. EXPLODED VIEW OF PARTS ABOVE BASEPLATE.

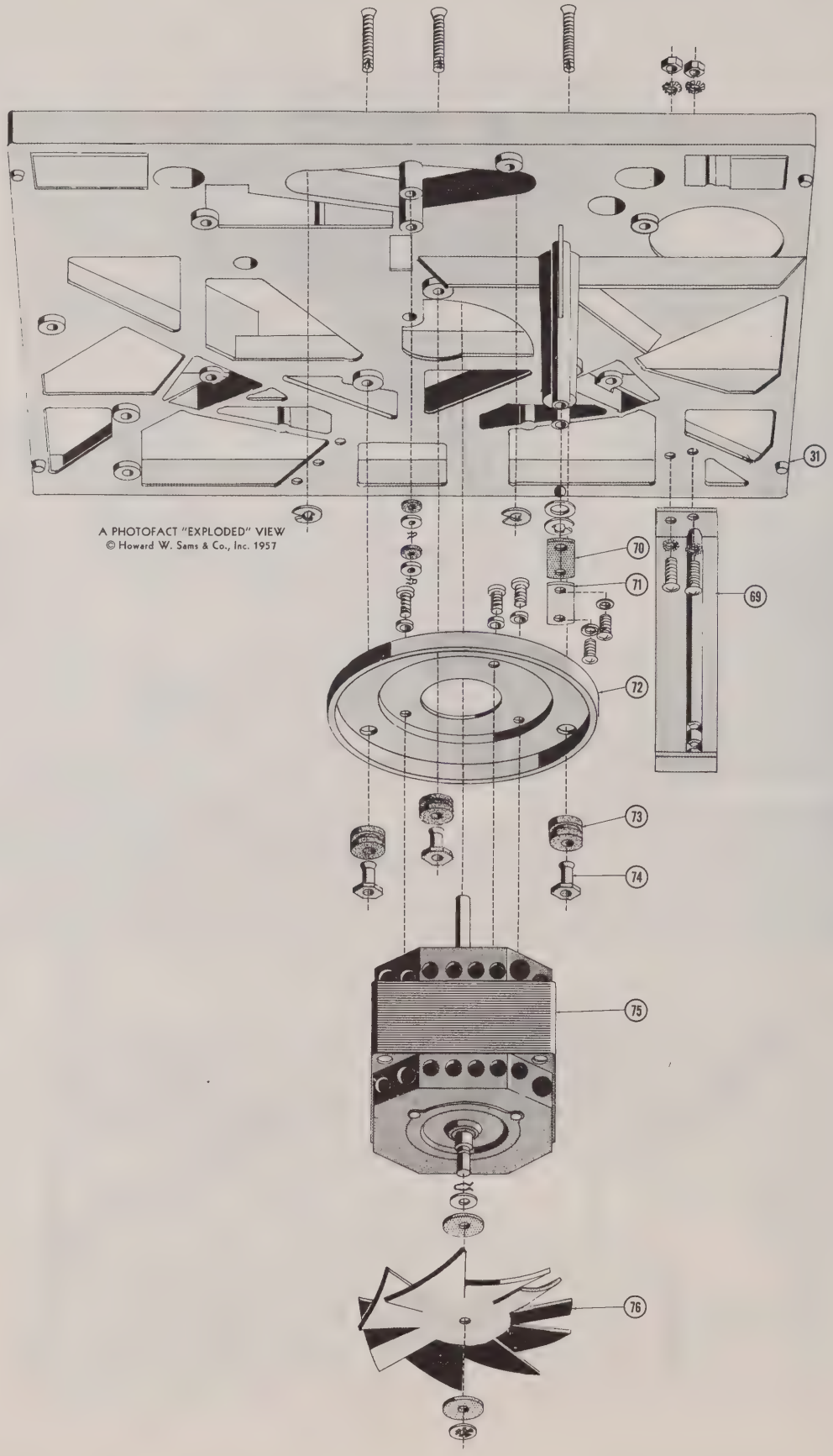


FIGURE 9C. EXPLODED VIEW OF PARTS BELOW BASEPLATE.

If the hub is smaller, wrap it with tape to the 2-inch diameter level. If it is large, multiply the spring scale reading by the radius of the hub to determine the ounce/inch reading.

Brake Tension —

Test Equipment — An accurate 0-8 oz. spring scale. The following procedure applies to both the supply and takeup turntable brakes. The brakes are applied only in the stopping position, so no manipulation of controls is necessary.

1. Remove the top cover (12) from the tape transport, and remove the rods (34) to the brake assembly.

2. Place the hook on the spring scale through the hole on the brake assembly, or put a string through the hole as a loop for the spring scale.

3. Using the spring scale pull the brake in a direction that will move the brake assembly directly away from the turntable. Scale reading should be from 5 to 8 ounces as the brake barely clears the turntable.

4. Repeat the procedure on the other turntable.

5. Replace the rods to the brake assemblies. Replace the top cover.

Capstan Idler Pressure —

Test equipment — Accurate spring scale capable of measuring up to 3 pounds.

1. Remove the top cover (12) from the tape transport.

2. Turn the "Play" Or "Record" switch clockwise until it locks in position.

3. There are two holes in the capstan idler arm (35), one of which is used. Place hook on the spring scale through the unused hole.

4. Using the spring scale, pull the capstan idler in a direction that will move it directly away from the capstan. Scale reading should be from 2 pounds to 2 pounds 13 ounces as the idler barely clears the capstan. If not, see Trouble Chart.

Flutter And "Wow" —

Test Equipment — Flutter Meter —

1. Flutter and "Wow" are produced by periodic irregularities in tape speed which appear as cycle frequency deviations in recording and reproducing. A standard flutter meter connected across the Output jack (Left Output on a stereophonic model) will indicate the flutter when the machine is in the reproduce mode.

2. Terminate the Output jack with a 270,000 ohm resistance. Follow the instructions furnished with the flutter meter to make this measurement.

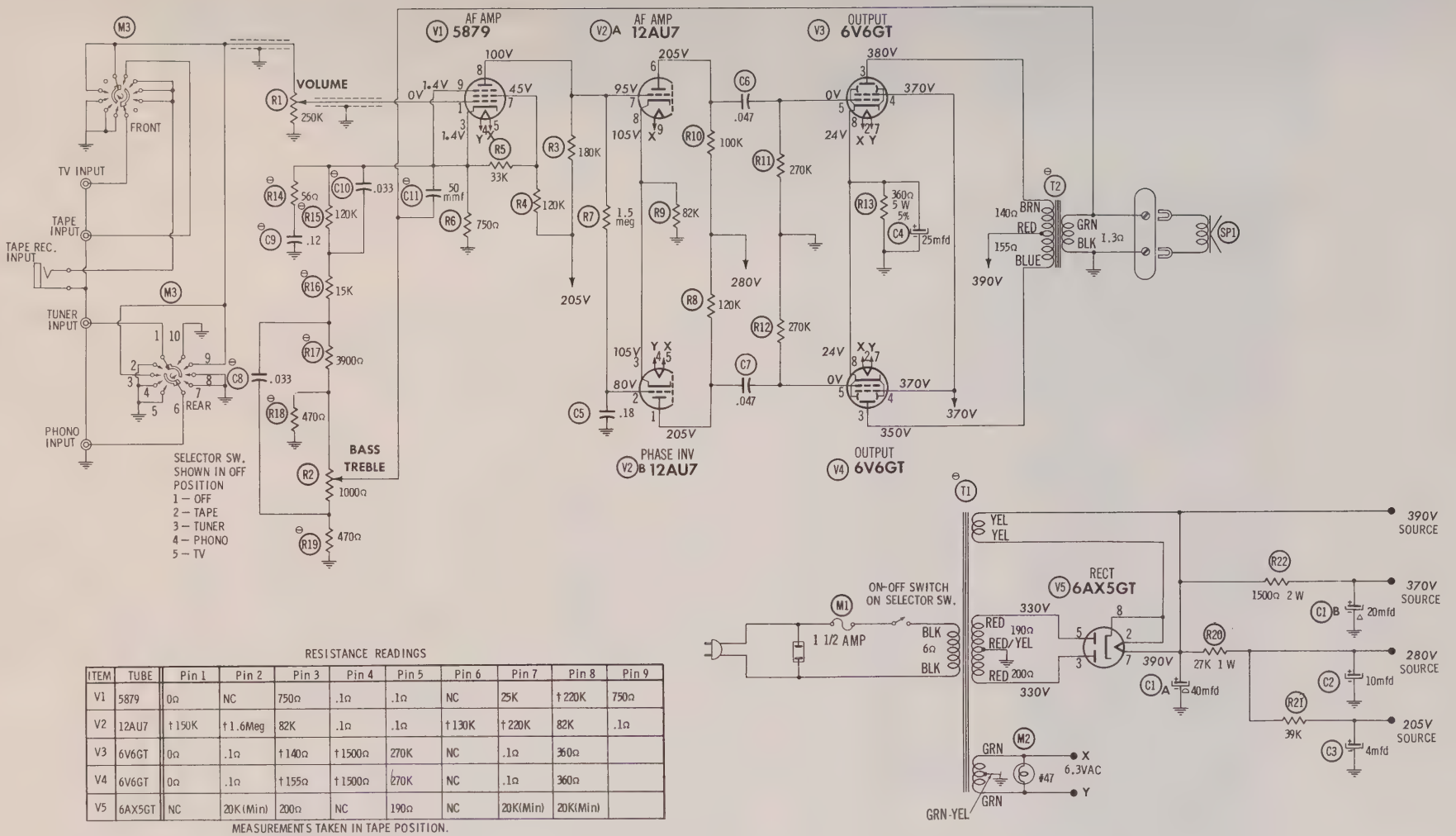
TROUBLE CHART

SYMPTOM	CHECK INDICATION	REMEDY
No rotation of capstan when selector switch turned to its "On" position.	Illuminating light of tape position indicator not lit; tube filaments not lite.	1. Power cable not connected. Connect power cable. Fuse defective; replace.
	Illuminating light of tape position indicator lit; tube filaments lit.	1. Drive motor belt jammed by changing speed selector when capstan is not rotating. Return speed selector to 3 3/4 ips position. If capstan starts then replace speed selector to desired position. 2. Drive motor belt broken; replace belt. 3. Drive motor defective; replace motor assembly.
Defective power supply.	No plate voltage; illuminating light of tape position indicator not lit; tube filaments not lit.	1. Power cable not connected; connect power cable. 2. Fuse defective; replace fuse. 3. Defective power transformer; replace transformer.
	No plate voltage; illuminating light of tape position indicator lit; tube filaments lit.	1. Tube V8 defective; replace tube.
No record meter indication when using microphone.	Meter illuminating light not lit.	1. Equipment not in record mode. 2. No power to equipment.
	Meter indication normal when recording from Input-Rec. jack.	1. Defective tube V4 or component in that stage. Replace faulty component.
	Meter indication not normal when recording from Input Rec. jack.	1. Defective tube V6 or V5, defective components in those stages, or defective record meter. Record a section of tape at approximately normal level. Reproduce it. If the recording seems normal it indicates a defective tube V6 or component in the stage or a defective record meter. 2. If the recording is not normal it indicates a defective tube V5 or component in that stage.
No recording function.	No record meter indication.	See above.
	Record meter indication normal.	1. Defective tube V5 or component in that stage. Replace defective part. 2. Record head defective. Replace head.
No reproduce function when playing tape known to be properly recorded. Tape motion normal.	Stereophonic reproduce models upper track only defective.	1. Defective tube V1 or defective component in that stage. Replace defective part. 2. Defective tube V2 or defective component in that stage. Replace defective part. 3. Defective head. Replace head.
	Lower track only defective.	1. Defective tube V3 or component in that stage. Replace defective part. 2. Defective tube V2 (second half) or component in that stage. Replace defective part. 3. Defective head, replace head.
	Both tracks defective.	1. Defective tube V2, replace tube.

TROUBLE CHART (CON'T.)

SYMPTOM	CHECK INDICATION	REMEDY
No erase function.	Distortion in recorded signal — no bias adjustment possible.	1. Defective tube V7 or components; replace defective part.
	No recorded signal — no bias adjustment possible.	1. Contacts on press to record switch M7 not making contact or dirty. Clean contacts, check that contacts make contact.
	Recorded signal normal — bias adjustment possible.	Defective erase head. Replace head assembly.
Tape speed not normal.	Low line voltage.	1. Line voltage must be at least .05 volts.
	Slipping drive belt (33).	1. Clean associated pulley surfaces, replace belt if necessary.
	Incorrect capstan idler pressure.	1. Replace capstan idler spring (36).
	Capstan bearing binding.	1. Replace capstan assembly (38).
	Defective drive motor (75).	1. Replace motor.
	Excessive tape holdback tension.	1. Check tape tension.
Wrong tape holdback tension.	Excessive tension.	1. Defective holdback spring. Replace spring.
		2. Defective felt pad; replace felt pad.
		3. Brake not releasing. Check mechanical linkage to brakes.
	Low tension.	1. Defective holdback spring; replace spring.
		2. Defective felt pad; replace pad.
Insufficient braking force.	Tape loop thrown when stopping in any mode.	1. Brake worn; replace worn brake assembly (21).
		2. Brake not free to move with direction of turntables. Reposition or replace wire spring (20) as necessary.
Wrong take tension.	Tape loop thrown when starting.	1. Takeup drive belt (24) slipping or broken. Clean pulley surfaces; replace belt if necessary.
		2. Rubber tire on takeup idler slipping or worn. Clean tire and takeup turntable; replace idler if necessary.
		3. Defective takeup clutch spring (25); replace spring.
		4. Defective play takeup spring (27); replace spring.
Failure to meet frequency response specifications.	Poor high frequency response.	1. Poor contact-heads and tape; clean head.
		2. Improper bias adjustment; adjust bias.
		3. Improper head alignment; align head.
		4. Incorrect holdback tension. Revolve or replace tape holdback (9A). Replace tape holdback spring (50).
		5. Improper bias adjustment; adjust bias.
		6. Improper head alignment; align head.

		7. Recording at excessive level. Reduce record level. Check record meter calibration. 8. Faulty reproduce amplifiers. Standard audio trouble shooting if indicated. 9. Faulty record amplifier. Would be indicated if reproduce response is normal. Standard audio trouble shooting.
Failure to meet signal-to noise specifications.	Random background noise or "poping and cracking".	1. Magnetized heads. Demagnetize heads. 2. Noise balance not properly adjusted. Adjust noise balance.
	High 60-cycle hum which does not vary as the listening volume control setting is changed.	Filament-to-cathode leakage in V2. Replace tube.
	High 60-cycle hum which disappears when the listening volume control is turned to minimum (full counter-clockwise).	Hum pickup into V1 or V3. Replace tube. Check for external hum sources is close proximity to recorder/ reproducer.
	High noise level in the low frequency range — either random or predominately 120 cycle or 30 cycle.	1. Motor vibration into microphonic tubes. Turn power off. Hold capstan to stall motor, and turn power on. If noise disappers vibration is causing. 2. Check that motor and subchassis shock mounts are free. 3. Replace V1 or V3.
	High amplitude motorboating.	1. Leads from pin 1 of V1 or V2 (or S1) too close to head leads, causing block oscillation. Correct leaddress. 2. Open head circuit. Replace head assembly.
	High frequency "ringing".	1. Microphonic tube, V1, V2, V3. Replace tube.
	"Crackling" or high frequency.	1. Noisy resistor — probably R6, R7, R8, R19, R20, or R21. Replace resistor.
	Noise reads high on VTVM not noticeable in speaker.	RF pickup from external source.
	Buzzing	RF pickup from television set. Move power cable and input cable. If the noise changes, TV is causing. Orient cables so noise disappears.
Failure to meet distortion specifications.		1. Magnetized heads, demagnetize heads. 2. Record bias improperly adjusted. Adjust record bias. 3. Recording at excessive level. Adjust record level.
Failure to meet flutter and wow specifications.		1. Dirt on the components in the tape threading path. Clean thoroughly.
	Flutter frequency approximately 21.36 cps at 7.5 ips.	1. Flat or dented capstan idler tire (revolves at 142 rpm. Replace capstan idler tire (4).
	Flutter frequency approximately 5.7 cps at 7.5 ips.	1. Drive belt (moves at approximately 343 rpm). Replace defective belt. Check that belt is tracking properly.



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	5879	0Ω	NC	750Ω	.1Ω	.1Ω	NC	25K	†220K	750Ω
V2	12AU7	†150K	†1.6Meg	82K	.1Ω	.1Ω	†130K	†220K	82K	.1Ω
V3	6V6GT	0Ω	.1Ω	†140Ω	†1500Ω	270K	NC	.1Ω	360Ω	
V4	6V6GT	0Ω	.1Ω	†155Ω	†1500Ω	270K	NC	.1Ω	360Ω	
V5	6AX5GT	NC	20K(Min)	200Ω	NC	190Ω	NC	20K(Min)	20K(Min)	

MEASUREMENTS TAKEN IN TAPE POSITION.
† MEASURED FROM PIN 8 OF V5.
* 6.3VAC MEASURED ACROSS FILAMENT
NC NO CONNECTION.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1957

382-5

SCHEMATIC MODELS A621 AND A692.

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amplifier	5879	
V2	AF Amp. -Phase Inv.	12AU7	
V3	Audio Output	6V6GT	
V4	Audio Output	6V6GT	
V5	Rectifier	6AX5GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA AMPEX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	450	CO-418	AFH2-56	BO440	FP376.5	TMD-53	D-230	TVL-2762
B	▲20	450							
C2	10	450	CO-55	PRS450V10	BR1045	TC72	TD-10-450	MT-4510	TVA-1705
C3	4	450	CO-54	PRS450V4	BR445	TC70	TD-4-450	MT-4504	TVA-1702
C4	25	25	CO-59	PRS25V25	BBR25-25	TC26	TD-25-25	MT-0225	TVA-1205

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA AMPEX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C5	.18	400	CO-382							
C6	.047	400	CO-333	P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C7	.047	400	CO-333	P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C8	.033	200		P288N-033	DF-303	CUB6S33		GEM-4133	6TM-S33	①
C9	.12	200								①
C10	.033	200		P288N-033	DF-303	CUB6S33		GEM-4133	6TM-S33	①
C11	50			SI 50	D6-500	LT6Q5	GP-50	UC-545	5GA-Q5	①

① C8, C9, C10, C11 and R14, R15, R16, R17, R18, R19 may be combined in one unit in some versions.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA AMPEX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	250K	½	H-1315	AB-51	A47-250K-Z	Q13-130	U44	Volume
B	Shaft			AK-7	FS-3	Not Req.	Not Req.	
R2A	1000Ω	½	H-1316	AB-5	A47-1000-S	Q11-108	U4	Bass-treble
B	Shaft			AK-7	FS-3	Not Req.	Not Req.	

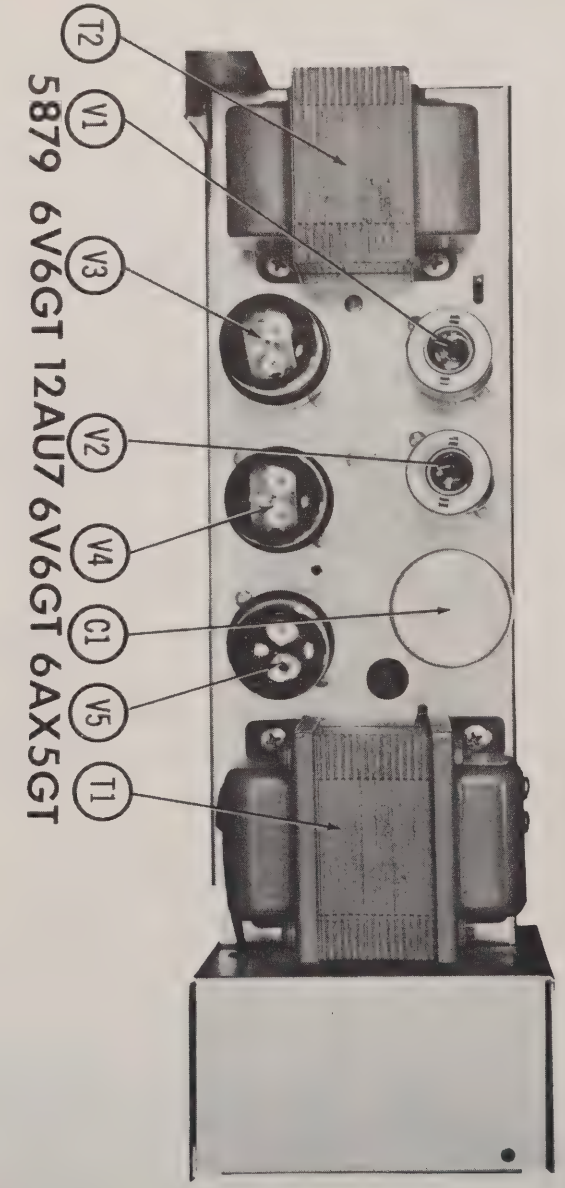
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	REPLACEMENT DATA AMPEX PART No.	IRC PART No.	NOTES
R3	180K			BTS-180K	
R4	120K			BTS-120K	
R5	33K			BTS-33K	
R6	750Ω			BTS-750	
R7	1.5Meg			BTS-1.5Meg	
R8	120K			BTS-120K	
R9	82K			BTS-82K	
R10	100K			BTS-100K	
R11	270K			BTS-270K	
R12	270K			BTS-270K	
R13	360Ω 5%	5			
R14	56Ω			BTS-56	①
R15	120K			BTS-120K	①
R16	15K			BTS-15K	①
R17	3900Ω			BTS-3900	①
R18	470Ω			BTS-470	①
R19	470Ω			BTS-470	①
R20	27K	1		BTA-27K	
R21	39K			BTS-39K	
R22	1500Ω	2		BTB-1500	

① C8, C9, C10, C11 and R14, R15, R16, R17, R18, R19 may be combined in one unit in some versions.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	AMPEX PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC @.52A	680VCT @.066A	6.3V @1.2A	6.3VCT @1.3A	B-9402 ①					

① Alternate part #H-1193.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	AMPEX PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	9300Ω CT	18Ω	B-9403 ①						① Alternate part #H-1194.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	AMPEX PART No.	QUAM PART No.	
SP1	8"	PM	18Ω	H-1235		

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			AMPEX PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	1½A 250V	070-012		31201.5 (3AG 1½A)	357001	AGC 1½	4405

MISCELLANEOUS

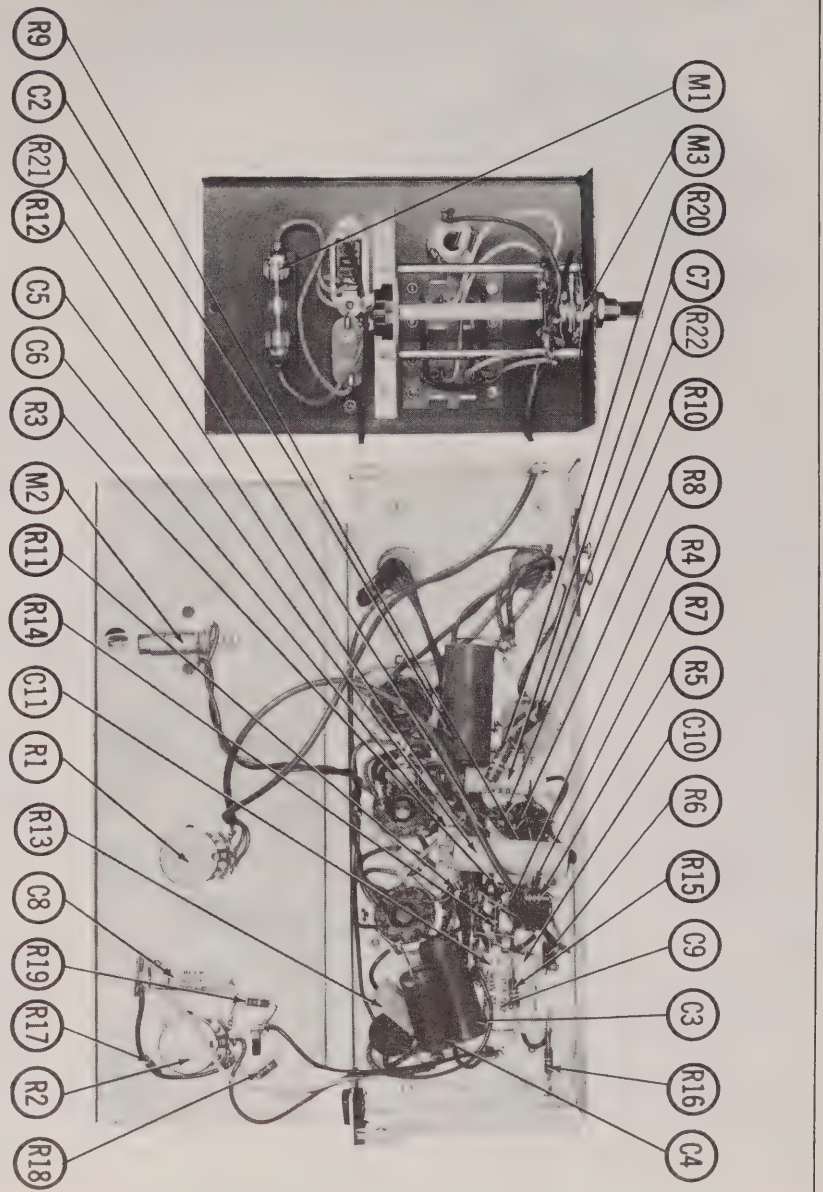
ITEM No.	PART NAME	AMPEX PART No.	NOTES
M2	Pilot Light	LA-5	Type #47
M3	Switch	H-1270	Function (Rotary wafer type)

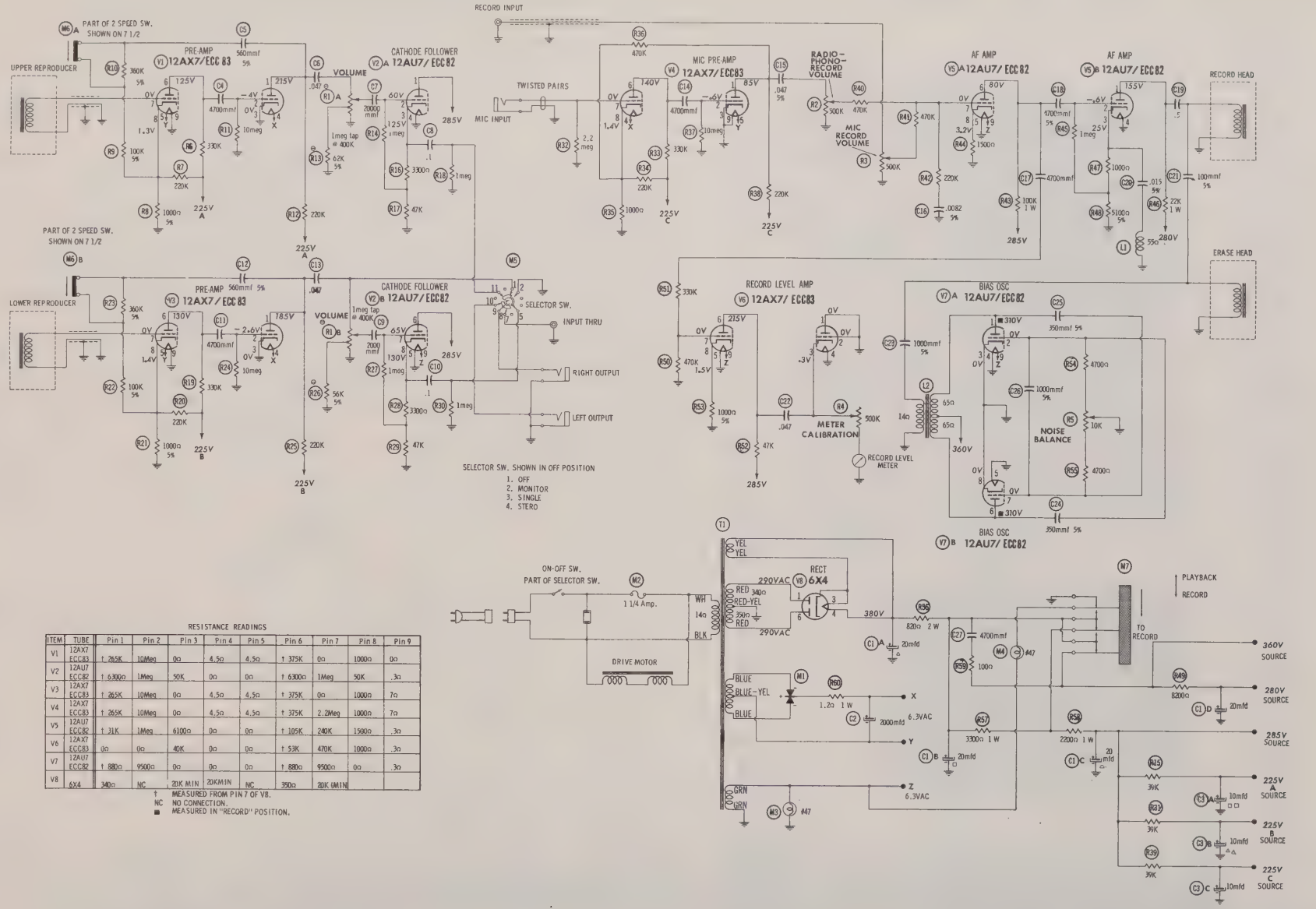
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	20902-1	
Cabinet	H-1403	

CHASSIS—BOTTOM VIEW





RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7 ECC83	† 265K	10Meg	0Ω	4.5Ω	4.5Ω	† 375K	0Ω	1000Ω	0Ω
V2	12AU7 ECC82	† 6300Ω	1Meg	50K	0Ω	0Ω	† 6300Ω	1Meg	50K	.3Ω
V3	12AX7 ECC83	† 265K	10Meg	0Ω	4.5Ω	4.5Ω	† 375K	0Ω	1000Ω	7Ω
V4	12AX7 ECC83	† 265K	10Meg	0Ω	4.5Ω	4.5Ω	† 375K	2.2Meg	1000Ω	7Ω
V5	12AU7 ECC82	† 31K	1Meg	6100Ω	0Ω	0Ω	† 105K	240K	1500Ω	.3Ω
V6	12AX7 ECC83	0Ω	0Ω	40K	0Ω	0Ω	† 53K	470K	1000Ω	.3Ω
V7	12AU7 ECC82	† 880Ω	9500Ω	0Ω	0Ω	0Ω	† 880Ω	9500Ω	0Ω	.3Ω
V8	6X4	340Ω	NC	20K MIN	20K MIN	NC	350Ω	20K MIN		

† MEASURED FROM PIN 7 OF V8.
NC NO CONNECTION.
■ MEASURED IN "RECORD" POSITION.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1957

382-5

SCHEMATIC MODELS A121, A122 AND A124.

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Preamplifier	12AX7/ ECC83	
V2	Cathode Follower	12AU7/ ECC82	
V3	Preamplifier	12AX7/ ECC83	
V4	Mic. Preamplifier	12AX7/ ECC83	
V5	AF Amplifier	12AU7/ ECC82	
V6	Record Level Amplifier	12AX7/ ECC83	
V7	Bias Oscillator	12AU7/ ECC82	
V8	Rectifier	6X4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA AMPEX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲ 20	450	CO578	AFH4-14	D0130	FP444	TMQ-12	Q-040	TVL-4763
B	■ 20	450							
C	▲ 20	450							
D	20	450							
C2	2000	15	CO66	AFH1-03	A0070	WP041	TMS-5	S-025	TVL-1168
C3A	■ 10	350	CO572		C0210	FP330.5	TMT-27	T-105	R2517 *
B	▲ 10	350							
C	10	350							

* Non Catalog Item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

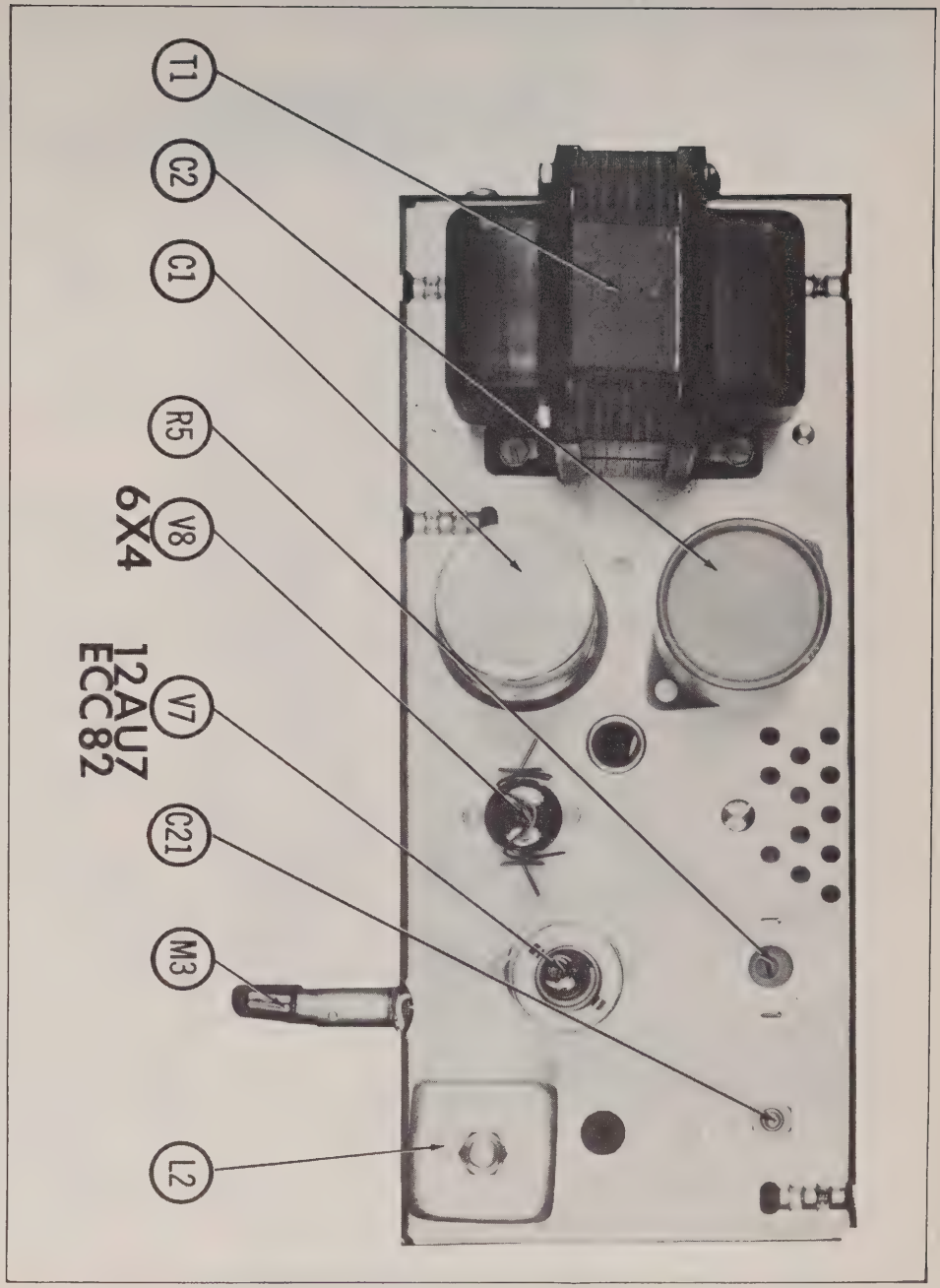
ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA AMPEX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C4	4700		CO-577	BPD-0047	DD-472	BYA10D47	ED-0047	UC-5247	5GA-D47	
C5	560		CO-579	1464-00056		1R5T56			MS-356	5%
C6	.047	400	CO-574	P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C7	20000		CO-337	BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	
C8	.1	400	CO-294	P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C9	20000		CO-337	BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	
C10	.1	400	CO-294	P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C11	4700		CO-577	BPD-0047	DD-472	BYA10D47	ED-0047	UC-5247	5GA-D47	
C12	560		CO-579	1464-00056		1R5T56			MS-356	5%
C13	.047	400	CO-574	P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C14	4700		CO-577	BPD-0047	DD-472	BYA10D47	ED-0047	UC-5247	5GA-D47	
C15	.047	400	CO-574	P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C16	.0082	200	CO-575							5%
C17	4700		CO-577	BPD-0047	DD-472	BYA10D47	ED-0047	UC-5247	5GA-D47	
C18	4700		CO-577	BPD-0047	DD-472	BYA10D47	ED-0047	UC-5247	5GA-D47	
C19	.5	400		P488N-5		CUB4P5		GEM-405	4TM-P5	
C20	.015	200	CO-576							5%
C21	100		CO-92							
C22	.047	400	CO-574	P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C23	1000		CO-6	1464-001		1R5D11			MS-21	5%
C24	350		CO-140							5%
C25	350		CO-140							5%
C26	1000		CO-6	1464-001		1R5D11			MS-21	5%
C27	4700		CO-577	BPD-0047	DD-472	BYA10D47	ED-0047	UC-5247	5GA-D47	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA AMPEX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1Meg	½	20983-1 ①				UE1708	Listening Volume Tap ⓐ 400K Note 1.
B	1Meg	½						Listening Volume Tap ⓐ 400K
R2A	500K	½	044-106	B-60	A47-500K-Z	Q13-133	U48	Radio-Phono, Recording Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	500K	½	044-106	B-60	A47-500K-Z	Q13-133	U48	Microphone, Recording Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R4	500K	½	044-108					Meter Calibration
R5A	10K	½	044-107	AB-14	A47-10K-S	B11-116	SU-20	Noise Balance
B	Shaft			AK-1	FKS-1/4	TM1-Kit	Not Req.	

Note 1. Alternate Part No. 044-106 500KΩ used in this application in Models A111, A112, and A114 only.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	AMPEX PART No.	IRC PART No.	
R6	330K		042-150	BTS-330K	
R7	220K		041-076	BTS-220K	
R8	1000Ω 5%		042-151	BTS-1000	
R9	100K 5%		041-023	BTS-100K	
R10	360K 5%		041-260	BTS-360K	
R11	10Meg		041-244	BTS-10Meg	
R12	220K		041-076	BTS-220K	
R13	62K 5%			BTS-62K	Note 1.
R14	1Meg		041-249	BTS-1Meg	
R15	39K		041-067	BTS-39K	
R16	3300Ω		041-054	BTS-3300	
R17	47K		041-250	BTS-47K	
R18	1Meg		041-249	BTS-1Meg	
R19	330K		041-150	BTS-330K	
R20	220K		041-076	BTS-220K	
R21	1000Ω 5%		042-151	BTS-1000	
R22	100K 5%		041-023	BTS-100K	
R23	360K 5%		041-260	BTS-360K	
R24	10Meg		041-244	BTS-10Meg	
R25	220K		041-076	BTS-220K	
R26	56K 5%			BTS-56K	Note 1.
R27	1Meg		041-249	BTS-1Meg	
R28	3300		041-054	BTS-3300	
R29	47K		041-250	BTS-47K	
R30	1Meg		041-249	BTS-1Meg	
R31	39K		041-067	BTS-39K	
R32	2.2Meg		041-252	BTS-2.2Meg	
R33	330K		041-078	BTS-330K	

ITEM No.	RATING		REPLACEMENT DATA		NOTES
	OHMS	WATT	AMPEX PART No.	IRC PART No.	
R34	220K		041-076	BTS-220K	
R35	1000Ω		041-048	BTS-1000	
R36	470K		041-080	BTS-470K	
R37	10Meg		041-244	BTS-10Meg	
R38	220K		041-076	BTS-220K	
R39	39K		041-067	BTS-39K	
R40	470K		041-080	BTS-470K	
R41	470K		041-080	BTS-470K	
R42	220K		041-076	BTS-220K	
R43	100K	1	041-170	BTA-100K	
R44	1500Ω		041-050	BTS-1500	
R45	1Meg		041-249	BTS-1Meg	
R46	22K	1	041-162	BTA-22K	
R47	1000Ω		041-048	BTS-1000	
R48	5100Ω 5%		041-001	BTS-5100	
R49	8200Ω		041-059	BTS-8200	
R50	470K		041-080	BTS-470K	
R51	330K		041-078	BTS-330K	
R52	47K		041-250	BTS-47K	
R53	1000Ω		041-048	BTS-1000	
R54	4700Ω		041-056	BTS-4700	
R55	4700Ω		041-056	BTS-4700	
R56	820Ω	2	041-201	BTB-820	
R57	3300Ω	1	041-152	BTA-3300	
R58	2200Ω	1	041-150	BTA-2200	
R59	100Ω		041-251	BTS-100	
R60	1.2Ω	1	043-220	BTS-1.2	

Note 1. Resistors R13 and R26 are factory selected to match R1 tracking. Values range from 56K to 82K.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	AMPEX PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC @.32A	590VCT @.013A	6.3V @.6A SEC. 4 24VCT @.450A	6.3V @1.25A	20933-1					

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		AMPEX PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1 L2	Tone Choke Bias Osc.	CH-69 6352	19-2078	BC-505	660	7.5 Millihenries

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	AMPEX PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.460	581-008	1017	C1B	604B	

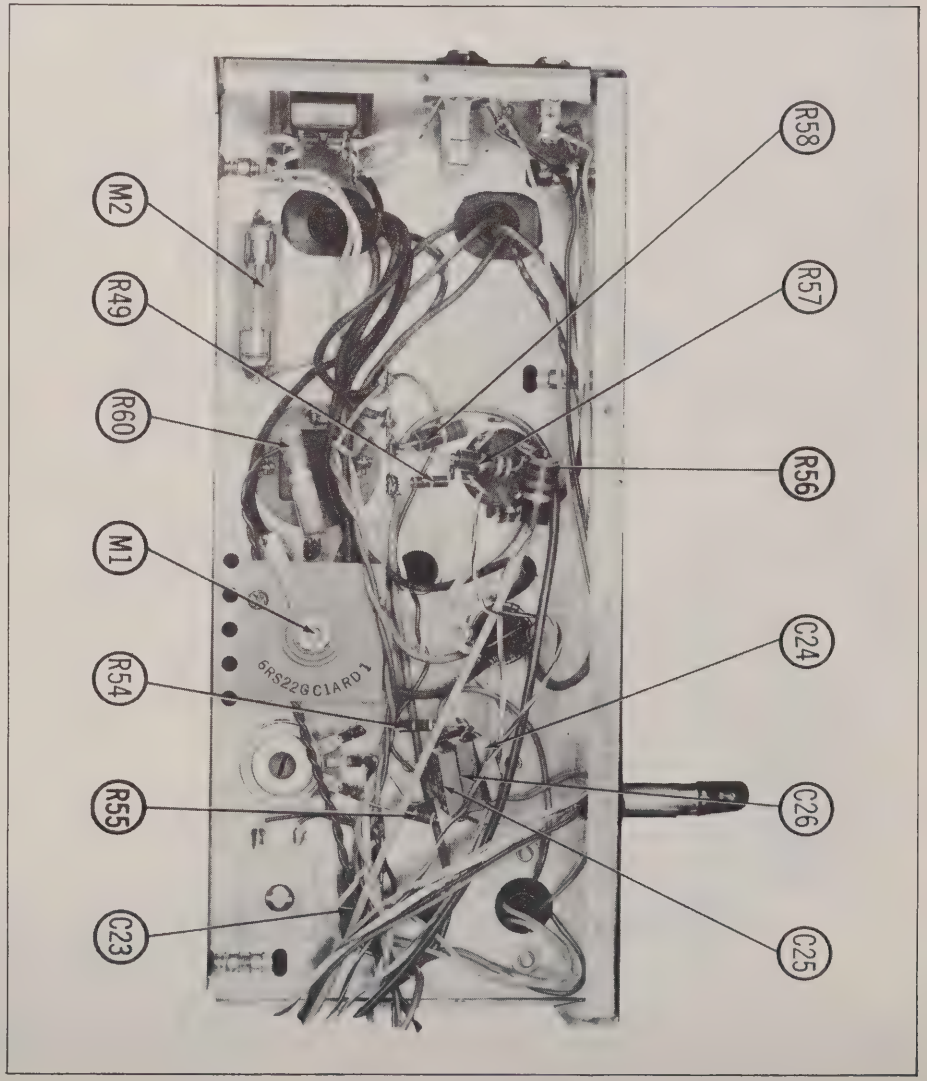
FUSES

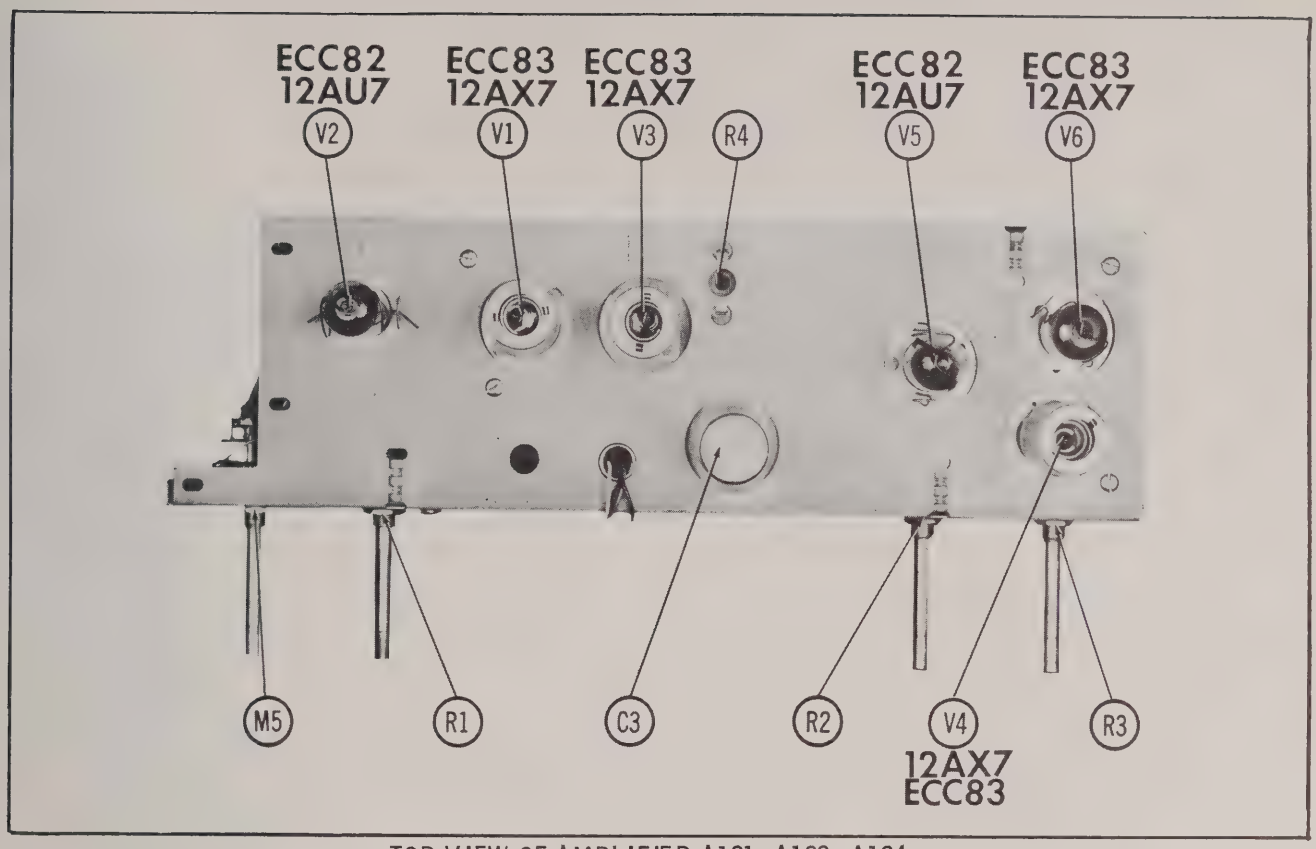
ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			AMPEX PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	3AG	1 1/4 S/B	070-022		3131.25	357001	MDL1 1/4	4405

CHASSIS—BOTTOM VIEW

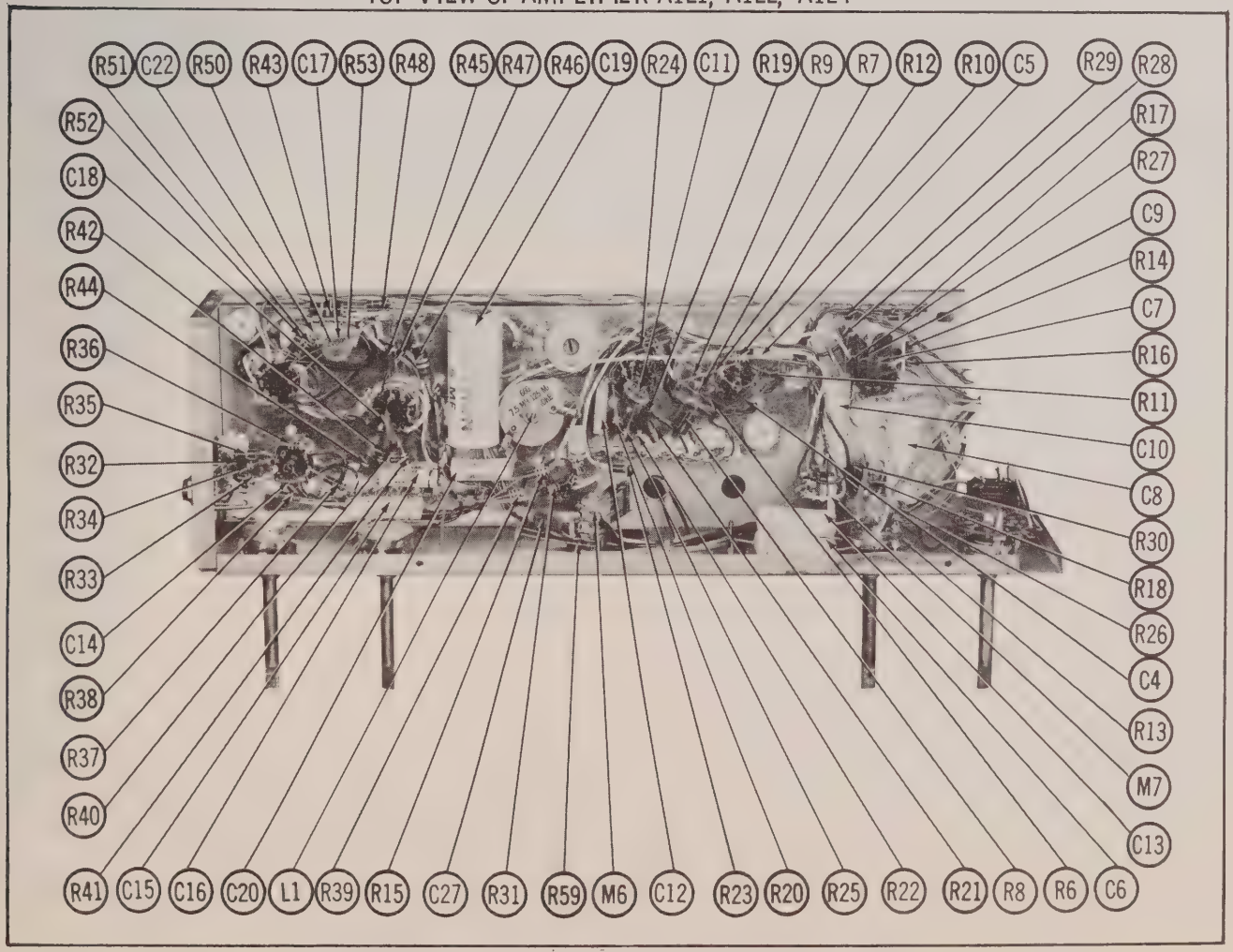
MISCELLANEOUS

ITEM No.	PART NAME	AMPEX PART No.	NOTES
M3	Pilot Light		#47
M4	Pilot Light		#47
M5	Switch		On-Off-Selector (Rotary, Wafer Type)
M6	Switch		Speed Slector Relay
M7	Switch		Record — Playback (Slide Type)





TOP VIEW OF AMPLIFIER A121, A122, A124



BOTTOM VIEW OF AMPLIFIER A121, A122, A124

MECHANICAL PARTS LIST

Ref. No.	Part No.	Description
1	20960-1	Speed Control Button
2	20896-1	Head Cover
3	20915-1	Capstan Idler Cover
4	20825-1	Capstan Idler Assembly
5	20902-1	Control Knob Assembly
6	20980-1	Control Bar Knob
7	20966-1	Pushbutton, Record and Stop
8	20920-1	Tape Guide
9	20844-1	Tape Holdback Cover
10	20843-1	Tape Holdback Base
11	20947-2	Cover Assembly Models A121, A122, A124
12	20895-1	Escutcheon
13	20847-1	Pulley Assembly, Fastwind
14	21077-1	Spring, Fastwind Mode
15	21074-1	Pad, Fastwind Mode Holdback Brake
16	432-014	"O" Ring, Fast Forward
17	20831-1	Cap Turntable Shaft
18	20821-1	Turntable Assembly
19	20984-1	Brake Spring
20	21019-1	Brake De-energizing Spring
21	20878-1	Brake Arm Assembly, Takeup
22	20892-1	Brake Lining
23	20876-1	Pulley Assembly, Takeup Clutch
24	432-015	"O" Ring, Takeup
25	20877-1	Spring, Takeup Clutch
26	20874-1	Play Takeup Assembly
27	21015-1	Play Takeup Spring
28	20814-1	Meter Bracket
29	20957-1	Meter
30	21012-1	Spring, Shuttle Return
31	20862-1	Base Plate Sub Assembly
32	20859-1	Pulley, Motor: for 60 cps.
	20862-1	Pulley, Motor: for 50 cps
33	21057-1	Capstan Drive Belt
34	21022-1	Control Brake Rod
35	20878-1	Capstan Idler Arm Assembly
36	21010-1	Capstan Idler Spring
37	20904-2	Head Assembly, Half Track Erase, Half Track Record and Stereo Reproduce - Models A-121, A-122, A-124
38	20819-1	Capstan Assembly
39	20954-1	Cam Assembly, Play Control
40	20856-1	Arm Assembly, Upper Cam
41	20955-1	Arm Assembly, Lower Cam Control
42	20901-1	Cam, Shaft, Record
43	21014-1	Spring, Shaft Return
44	20845-1	Idler Assembly, Rewind
45	21023-1	Rod, Control, Fastwind
46	21027-1	Yoke Sub-Assembly, Dual Speed: for 60 Cycle
	21027-2	Yoke Sub-Assembly, Dual Speed for 50 Cycle
47	21031-1	Detent Bracket
48	21029-1	Wire, Dual Speed Detent and Equalization
49	20897-1	Arm, Holdback
50	21013-1	Spring, Holdback Tension
51	20810-1	Brake Lever
52	20953-1	Cam Assembly Fastwind
53	20812-1	Shuttle Interlock
54	21018-1	Spring, Scissors Return
55	20900-1	Cam, Shaft Stop
56	432-016	"O" Ring, Position Indicator
57	20937-1	Worm Pulley Assembly, Counter Drive
58	20940-1	Retainer Spring
59	20941-1	Retainer Spring Pad
60	20913-1	Jack Shaft Assembly, Counter Drive
61	20931-1	Position Indicator Assembly
62	20978-1	Gear Assembly, Counter
63	21008-1	Spring, Position Indicator Latch
64	20940-1	Retainer Spring
65	20929-1	Escapement Latch
66	20945-1	Head Housing Cover
67	21021-1	Rod, Control, Play Takeup
68	21022-2	Rod, Control, Holdback Tension
69	21058-1	Bracket, Transport Mounting
70	20950-1	Retainer, Capstan Thrust, Nylon
71	20950-2	Retainer, Capstan Thrust, Steel
72	20808-1	Mounting Plate, Motor Ass'y.
73	20982-1	Shockmount, Motor
74	21069-1	Sleeve Nut, Motor Shockmount
75	20872-1	Drive, Motor
76	20993-1	Fan, Motor

PHOTOFACT* Folder

*TRADE MARK

RETMA MEMBER

BULOVA
MODELS 200 Series, 240 Series

BULOVA
MODELS 200 Series, 240 Series

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

BULOVA
MODELS 200 Series, 240 Series

TRADE NAME	Bulova Models 200 Series, 240 Series
MANUFACTURER	Electronics Guild, Inc., Sunrise Highway, Valley Stream, Long Island, N. Y.
TYPE SET	Three Power Portable AM Receiver
TUBES (Four)	Types 1R5 Converter, 1U4 IF Amplifier, 1U5 Det.-AVC-AF Amp., 3V4 Output
POWER SUPPLY	110-120 Volts AC-DC (or) 3 Volts "A" Supply & 67.5 Volts "B" Supply
RATING	.15 Amp. @ 117 Volts AC (or) 180MA @ 3 Volts DC & 7MA @ 67.5 Volts DC (15 Watts)
TUNING RANGE—BROADCAST	535KC - 1640KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use battery power, if possible. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Loop should be maintained in the same relative position to chassis as when the receiver is in cabinet.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to Ant. Stator Lug on tuning gang. Low side to B-.	455KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation.
2.		Loop	1640KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1500KC	Tune to 1500KC signal	"	A6	"

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	1R5	
V2	IF Amplifier	1U4	
V3	Det. - AVC - AF Amp.	1U5	
V4	Output	3V4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA BULOVA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▬40	150		AFH4-33	D0230	FP407.5	TMQ-21	Q-080	TVL-4410
B	■40	150							
C	▲200	10							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA BULOVA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	.05	400		BPD-05		CUB4S5		GEM-415	4TM-S5	
C3	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C4	3000			BPD-003	DD-302	BYA10D3	ED-003	UC-523	5GA-D3	
C5	2000			BPD-002	DD-202	BYA10D2	ED-002	UC-522	5GA-D2	
C6	.047	400		BPD-05	DF-503	CUB4S47		GEM-4147	4TM-S47	
C7	20000			BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	
C8	.1	400		P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA BULOVA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2Meg	½		B-76	A47-2Meg-Z	Q13-139	U55	Volume
B	Shaft			Not Req.	RS-2	PQ	Not Req.	
C	Switch			KB-2	SWE-20	76-2	US-27	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

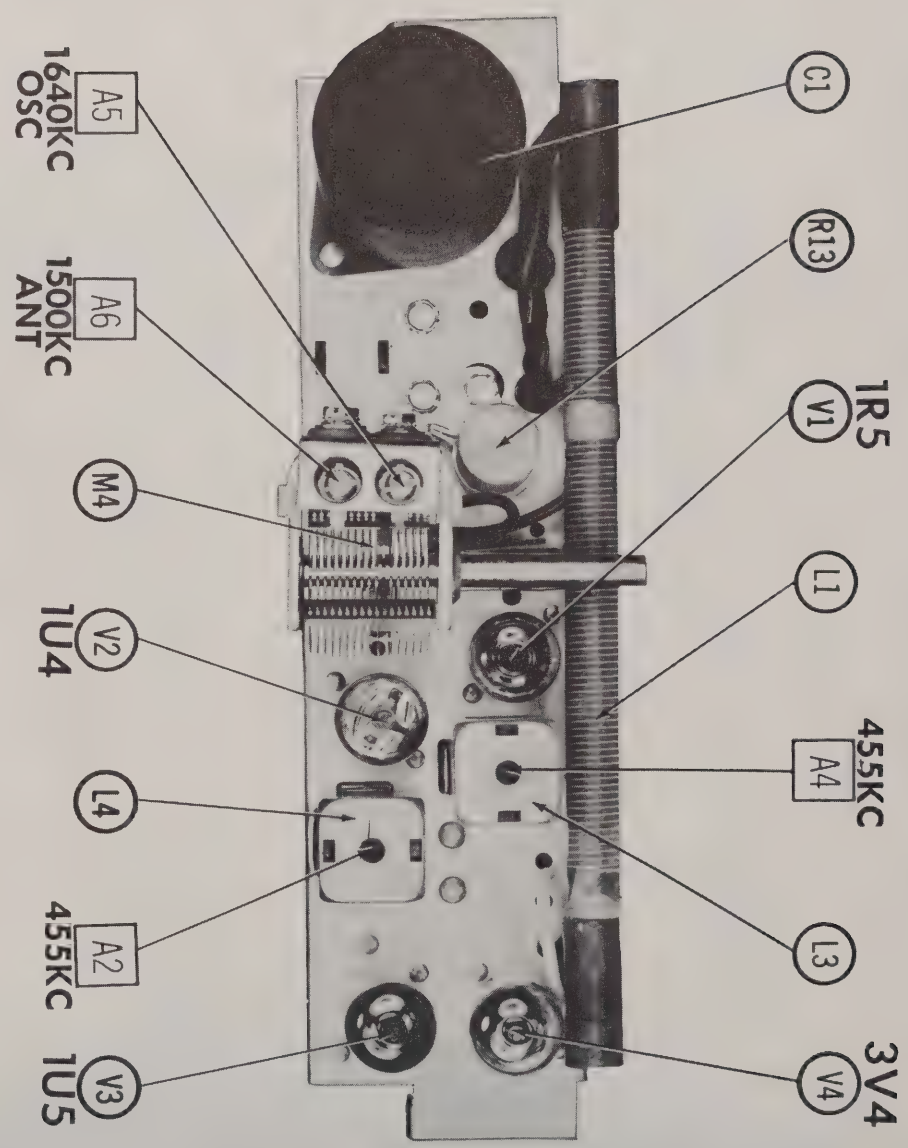
ITEM No.	RATING OHMS	RATING WATT	BULOVA PART No.	NOTES
R2	100K			
R3	3.3Meg			
R4	15K			
R5	3.3Meg			
R6	270Ω			
R7	27Ω			
R8	270Ω			

ITEM No.	RATING OHMS	RATING WATT	BULOVA PART No.	NOTES
R9	820Ω			
R10	220K			
R11	470Ω			
R12	3300Ω			
R13A	68Ω	5		
B	2300Ω	5		

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA BULOVA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	9500Ω	3-4Ω	1510-3	Z1117 ①	A-2998	A-3329	24S49	S-11X	① Drill new mounting hole.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	BULOVA PART No.	QUAM PART No.	
SP1	3½"	PM	3-4Ω	200-26-2	3A07	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		BULOVA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1 L2 L3 L4	Loop Stick Osc. Coil Input IF Output IF		16-6758	BC-352	12-C1	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	BULOVA PART No.	REPLACEMENT DATA
K1	Audio Coup. Net.	2000MMF, 150MMF, 10000MMF, 150MMF, 5000MMF, 4. 7Meg, 4. 7Meg, 1Meg, 2. 2Meg		Centralab PC-166

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	BULOVA PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	. 058A		1003A	RS075	75	

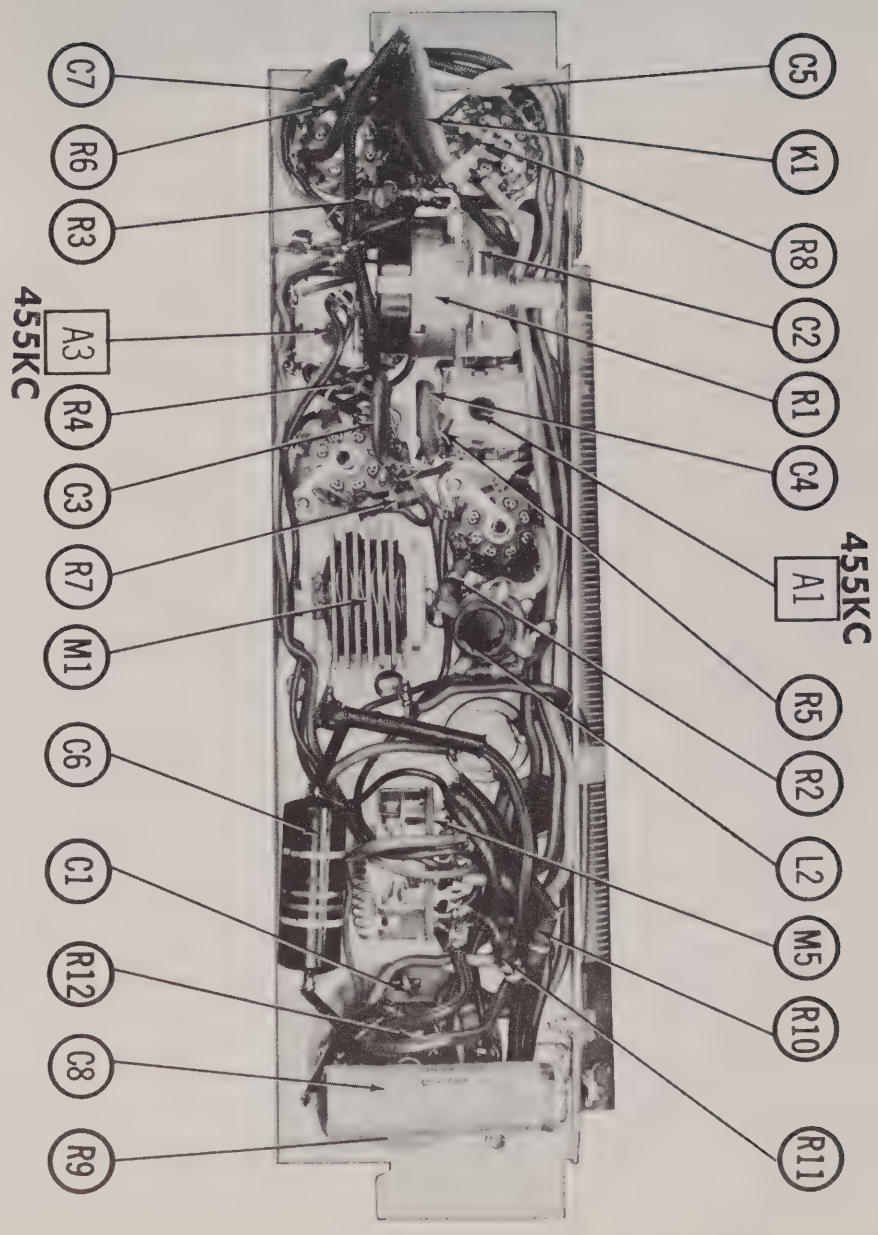
BATTERIES

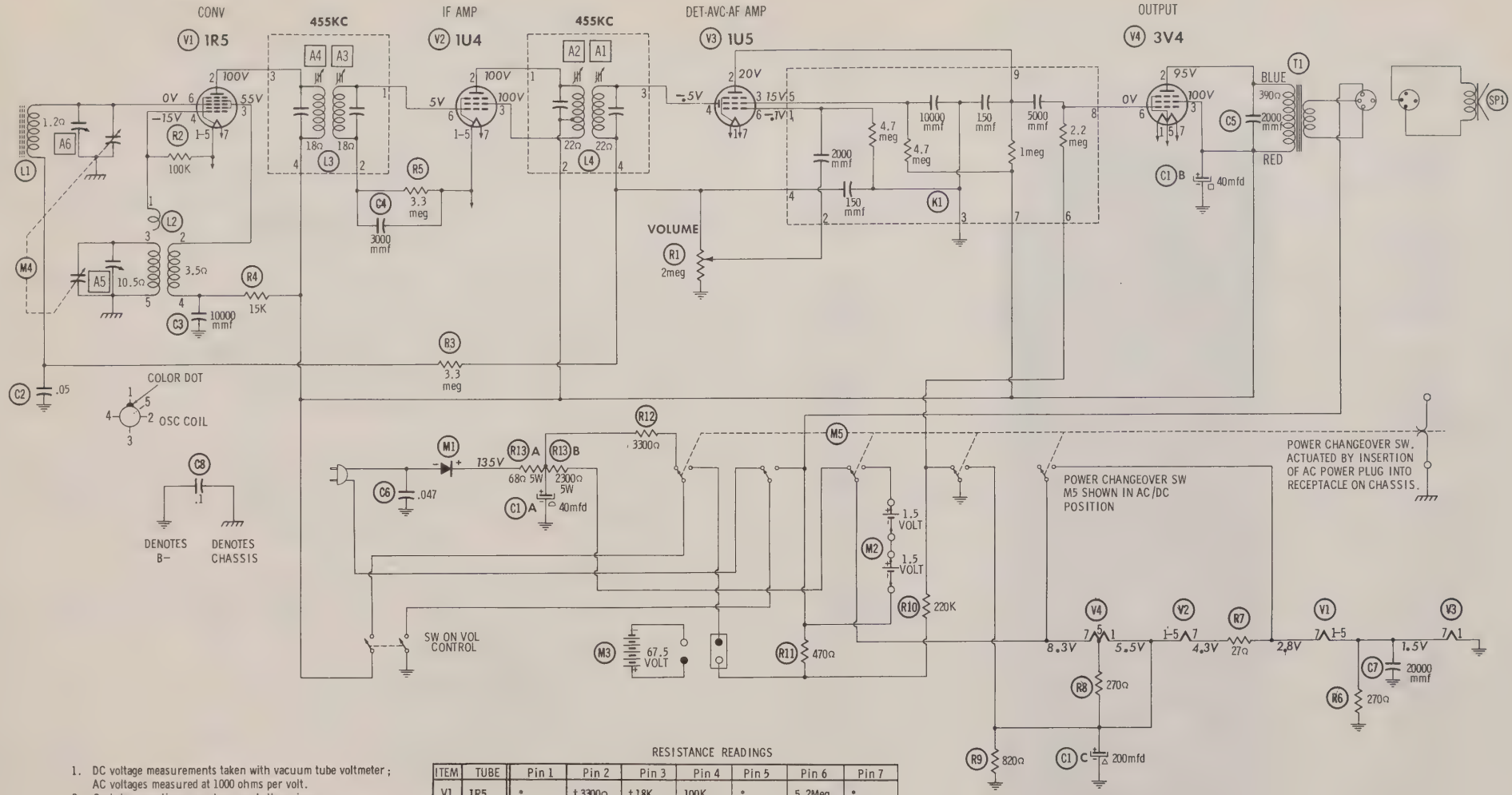
ITEM No.	VOLTAGE	BULOVA PART No.	REPLACEMENT DATA								NOTES
			BURGESS		EVEREADY		MALLORY		RAY-O-VAC		
			"A"	"B"	"A"	"B"	"A"	"B"	"A"	"B"	
M2	1. 5V	912	2R		950		M-13		2LP		Connect 2 in series
M3	67½V	149		P45		477		M-211P		211P	

MISCELLANEOUS

ITEM No.	PART NAME	BULOVA PART No.	NOTES
M4 M5	Tuning Cap. Switch		2 Gang (Ant. 18-240MMF, Osc. 15-115MMF) Power Changeover (Rotary Wafer Type)

CHASSIS—BOTTOM VIEW





1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum. no signal apllied for voltage measurements.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	1R5	*	†3300Ω	†18K	100K	*	5.2Meg	*
V2	1U4	*	†3300Ω	†3300Ω	TP	*	3.3Meg	*
V3	1U5	*	†1Meg	†4.7Meg	2Meg	NC	4.7Meg	*
V4	3V4	*	†3700Ω	†3300Ω	TP	*	2.2Meg	*

* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE
† MEASURED FROM OUTPUT OF M1
NC NO CONNECTION
TP TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1957

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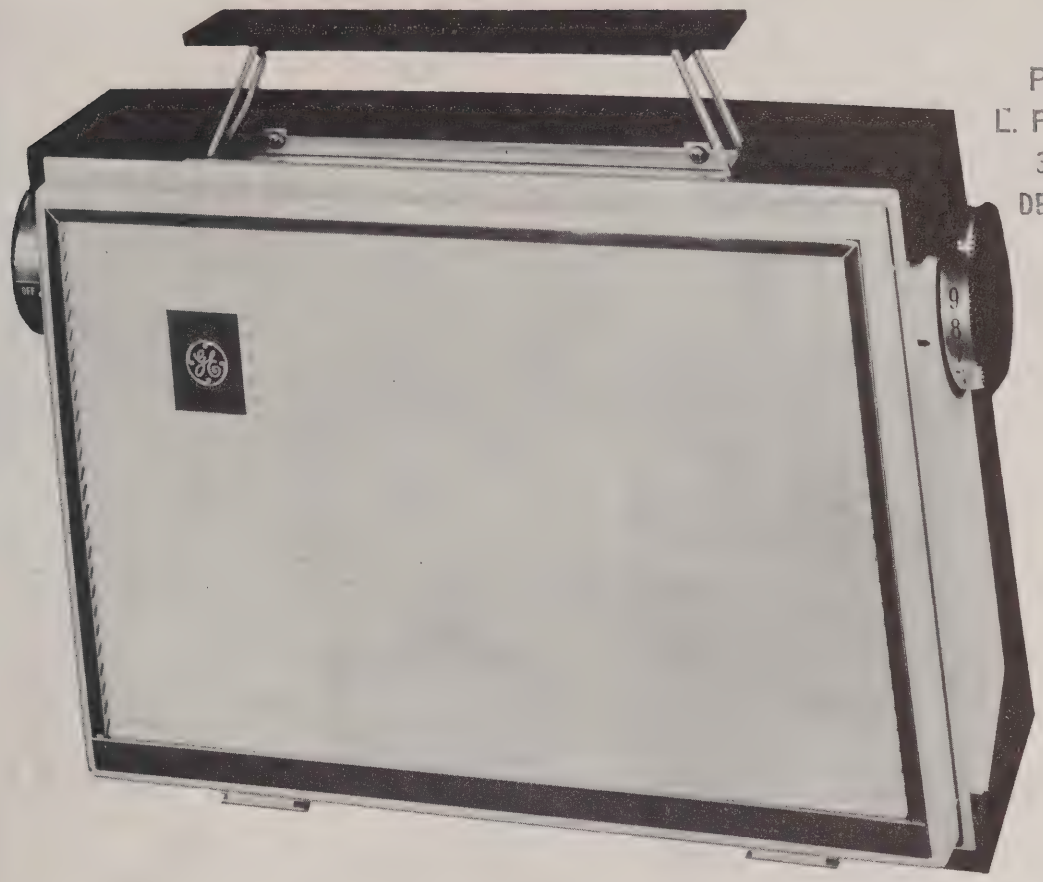

GENERAL ELECTRIC
MODELS 670, 671, 672, 673

GENERAL ELECTRIC
MODELS 670, 671, 672, 673

TRADE NAME	General Electric Models 670, 671, 672, 673
MANUFACTURER	General Electric Co., Products Service, Radio Receiver Dept., 869 Broad St., Utica, N. Y.
TYPE SET	Three Power Portable AM Receiver
TUBES (Four)	Types 1R5 Converter, 1U4 IF Amplifier, 1U5 Det.-AVC-AF Amp., 3V4 Output
POWER SUPPLY	105-120 Volts AC-DC (or) 7.5 Volts "A" Supply & 90 Volts "B" Supply
RATING	.15 Amp. @ 117 Volts AC (or) 52 MA @ 7.5 Volts DC & 6 MA @ 90 Volts DC (10 Watts)
TUNING RANGE--BROADCAST	540KC - 1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use battery power, if possible. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to pin 6 (grid) of 1R5 (V1). Low side to B-.	455KC (400~ Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation.
2.		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1500KC	Tune to 1500KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of H208

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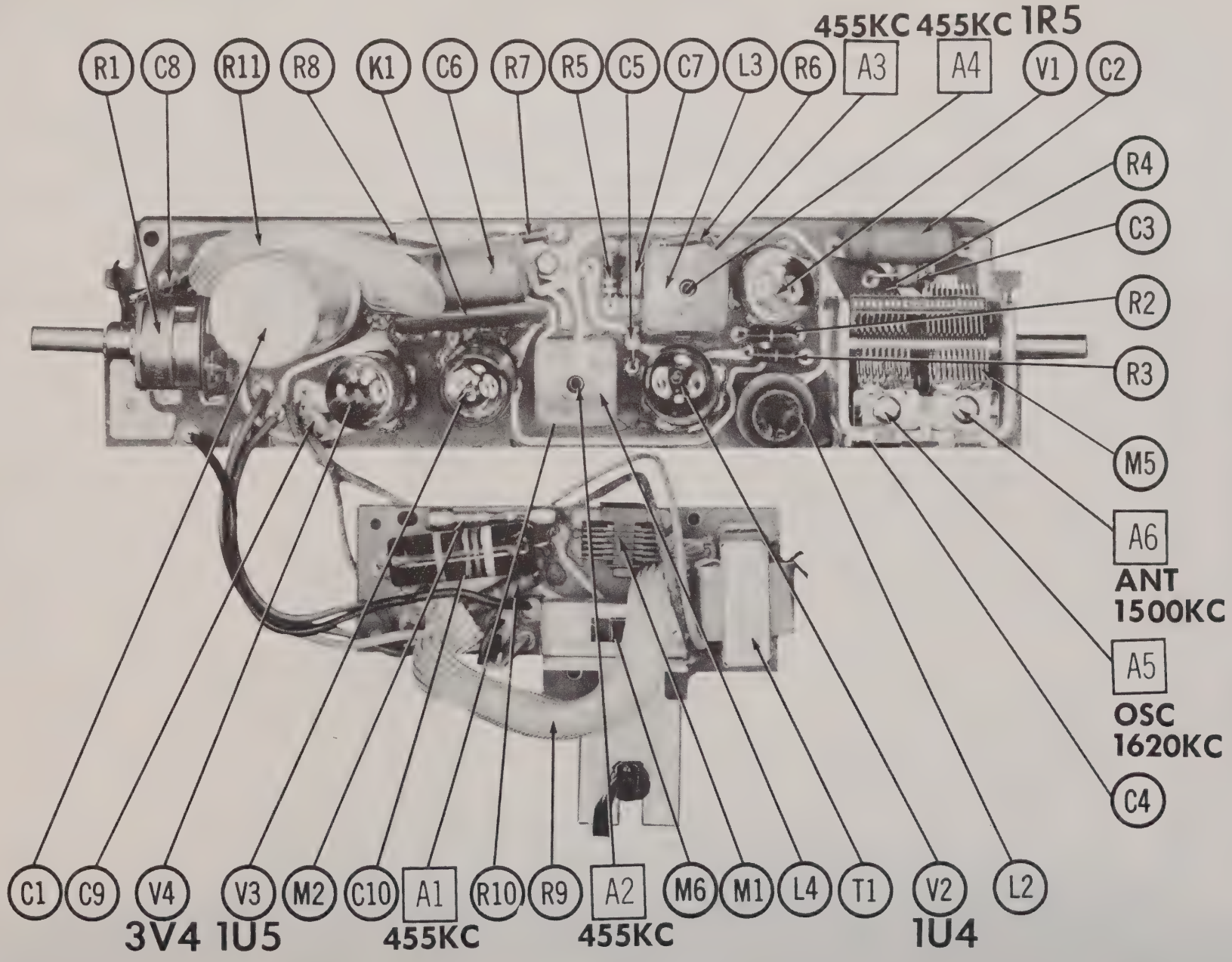


CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS
TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	1R5	
V2	IF Amplifier	1U4	
V3	Det. - AVC - AF Amp.	1U5	
V4	Output	3V4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA G. E. PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■90	150	RCE-230			PFP302.75			R2595 *
B	▲40	150							
C	400	10							

*Non Catalog Item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA G. E. PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	.05	400	RCC-078	P488N-05	DF-503	CUB4S5		GEM-415	4TM-S5	
C3	47			SI 47	D6-470	LT6Q47	GP-47	UC-5447	5GA-Q47	
C4	5000		RCW-3014	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C5	2.7									10%
C6	.33	100	RCN-070	P288N-33		CUB2P33		GEM-2033	2TM-P33	
C7	3000		RCW-3118	BPD-0033	DD-302	BYA10D3	ED-003	UC-523	5GA-D3	
C8	10000	1000	RCW-3250	DAC-2		BYA10S1M			BL-S10	
C9	2000		RCW-3119	BPD-002	DD-202	BYA10D2	ED-002	DC522	5HK-D2	
C10	.047	600	RCN-109	P688N-047	DF-503	CUB6S47		GEM-6147	6TM-S47	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA G. E. PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	1Meg	½	RRC-367					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	G. E. PART No.	NOTES
R2	100K			
R3	15K			
R4	220Ω			
R5	3.3Meg			
R6	6.8Meg			
R7	3.3Meg			
R8	2200Ω			
R9	68Ω	4	RRW-143	
R10	2200Ω	1		
R11	2450	10	RRW-144	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA G. E. PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	11.6K	3-4Ω	RTO-186		A-2927①	A-3329 ②	24S84	S-11Z	① Bend ears down. ② Use orig. mtg. frame.

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA G. E. PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	ROP-036	4A07	

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA G. E. PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	NOTES
L1	Loop Stick	RLL-069				
L2	Osc. Coil	RLC-139				
L3	Input IF	RTL-193	16-6780	BC-356	13-PC1	
L4	Output IF	RTL-193	16-6780	BC-357	13-PC2	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	G. E. PART No.	REPLACEMENT DATA
K1	Audio Coup. Net.	2000MMF, 150MMF, 10000MMF, 220MMF, 5000MMF, 3.3Meg, 1Meg, 4.7Meg, 10Meg	REK-010	

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA G. E. PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	.063A	RER-020	1003A	RS075	75	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA G. E. PART No. FUSE	G. E. PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M2	3AG	2/10A 125V S/B	REF-026		315.200 (3AG 2/10A 125V S/B)		MDV 2/10	

BATTERIES

ITEM No.	VOLTAGE	G. E. PART No.	REPLACEMENT DATA BURGESS "A"	BURGESS "B"	EVEREADY "A"	EVEREADY "B"	MALLORY "A"	MALLORY "B"	RAY-O-VAC "A"	RAY-O-VAC "B"	NOTES
M3	7½V		C5		717		M9		9		
M4	90V			P60		479		M214		214	

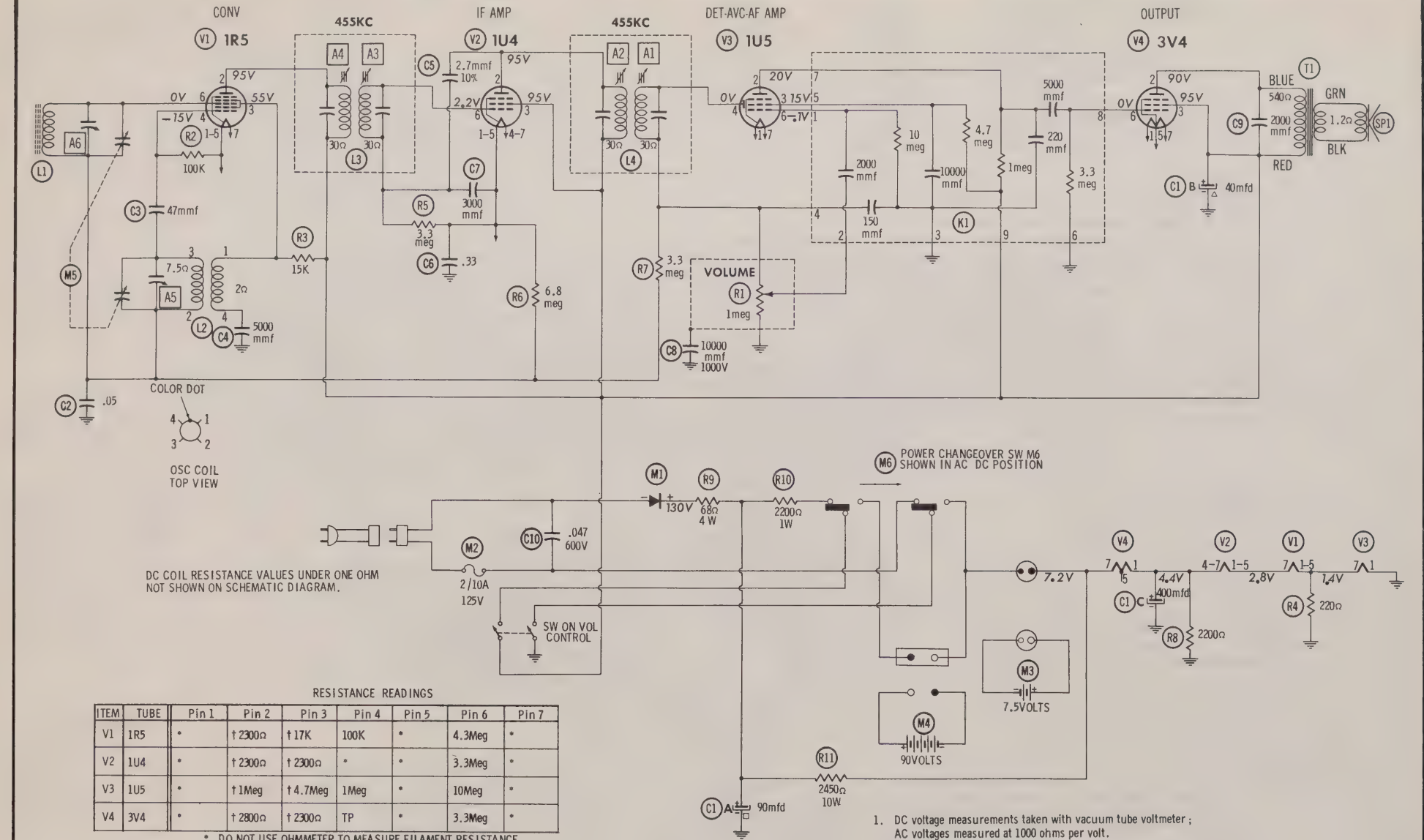
MISCELLANEOUS

ITEM No.	PART NAME	G. E. PART No.	NOTES
M5	Tuning Cap.	RCT-098	Two Gang (Ant. 22-300MMF)
M6	Switch	RSW-114	Power Changeover (Slide Type DPST)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	RDK-580	Tuning (Black) Models 670, 671, 673
Knob	RDK-579	Tuning (Rust) Model 672
Knob	RDK-583	On-Off-Volume (Black) Models 670, 671, 673
Knob	RDK-582	On-Off-Volume (Rust) Model 672
Cabinet	RAU-468	Black & White, Model 671
Cabinet	RAU-467	Black, Model 670
Cabinet	RAU-465	White & Rust, Model 672
Cabinet	RAU-466	Light Blue & Blue-Green, Model 673
Handle	RHY-083	Black, Models 670, 671
Handle	RHY-081	Rust, Model 672
Handle	RHY-082	Blue-Green, Model 673
Door	RAD-204	Cord Compartment (Black) Models 670, 671
Door	RAD-203	Cord Compartment (Blue-Green) Model 673
Door	RAD-202	Cord Compartment (Rust) Model 672



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	1R5	*	†2300Ω	†17K	100K	*	4.3Meg	*
V2	1U4	*	†2300Ω	†2300Ω	*	*	3.3Meg	*
V3	1U5	*	†1Meg	†4.7Meg	1Meg	*	10Meg	*
V4	3V4	*	†2800Ω	†2300Ω	TP	*	3.3Meg	*

* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE
† MEASURED FROM OUTPUT OF M1
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1957

PHOTOFACT* Folder
*TRADE MARK

GROMMES
MODELS 207, 207A

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

GROMMES
MODELS 207, 207A

GROMMES
MODELS 207, 207A

TRADE NAME	Grommes Models 207, 207A
MANUFACTURER	Precision Electronics, Inc., 9101 King Ave., Franklin Park, Ill.
TYPE SET	AC Operated 6 Channel Audio Preamplifier
TUBES(Four)	Types 12AX7 Preamplifier, 12AX7 AF Amplifier, 12AU7 AF Amp.-Cath. Follower, 6X4 Rectifier
POWER SUPPLY	* 110-120 Volts AC-60 Cycles RATING .20 Amp. @ 117 Volts AC (20 Watts)

* OPERATING VOLTAGES FOR MODEL 207 ARE SUPPLIED FROM AN EXTERNAL SOURCE

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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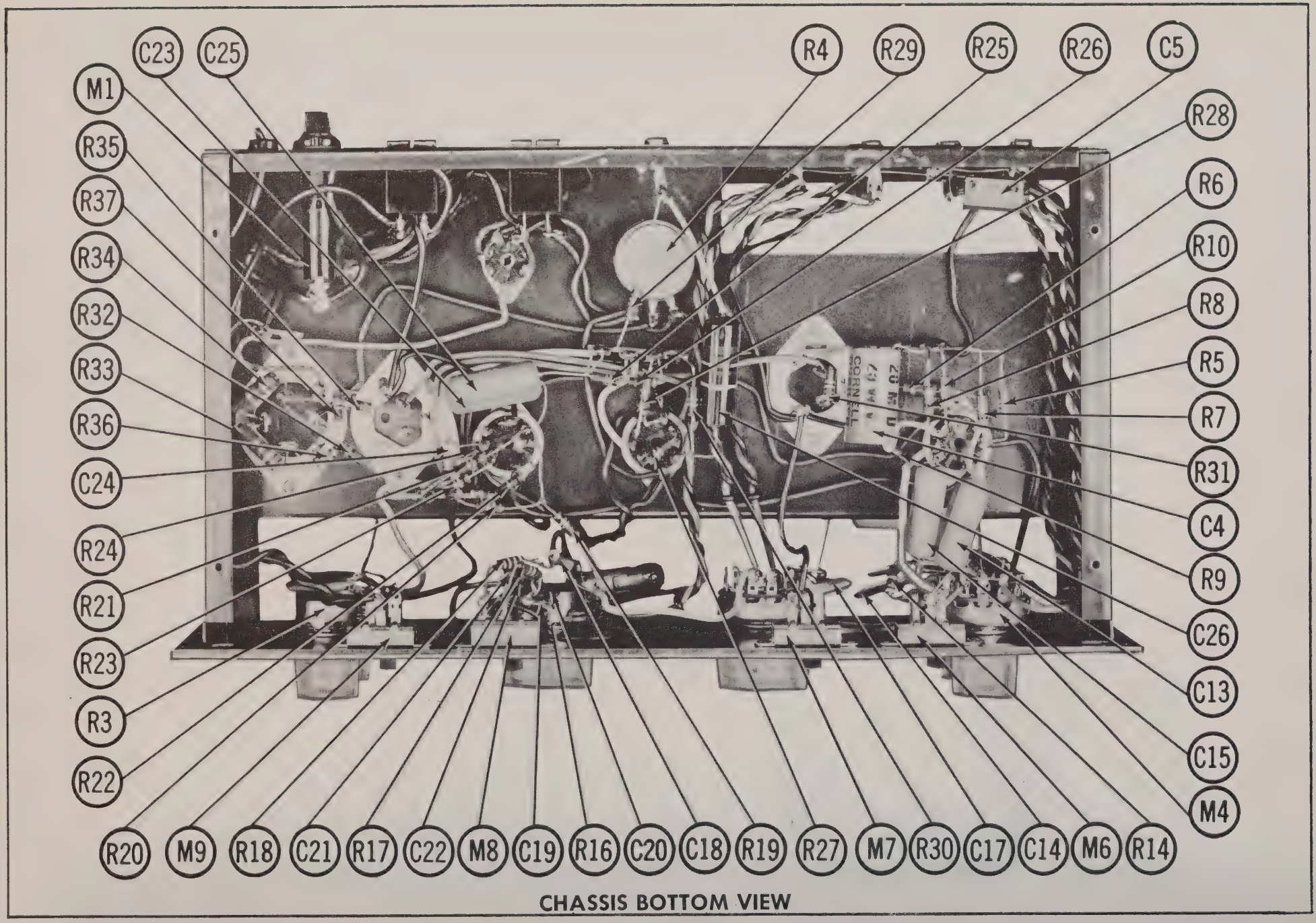


CHASSIS BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Tape & Phono Preamp.	12AX7	
V2	AF Amplifier	12AX7	
V3	AF Amplifier - Cathode Follower	12AU7	
V4	Rectifier	6X4	Note 1

Note 1. Not used in Model 207

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA GROMMES PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲40	400	(Note 1)	AFH4-117-48					R2246 *
B	■30	350							
C	▲10	300							
D	20	25							
C2A	■10	350		AFH2-47	B0370	FP231	TMD-47	D-200	TVL-2750
B	▲10	350	(Note 2)						
C3A	■10	350		AFH2-47	B0370	FP231	TMD-47	D-200	TVL-2750
B	▲10	350							
C4	20	25	(Note 3)	PRS50V20	BBR20-25	TC26	TD-25-25	MT-0220	TVA-1205

Note 1. C1 is not used in Model 207
Note 2. C2B is not used
Note 3. Not used in Model 207
* Non catalog item

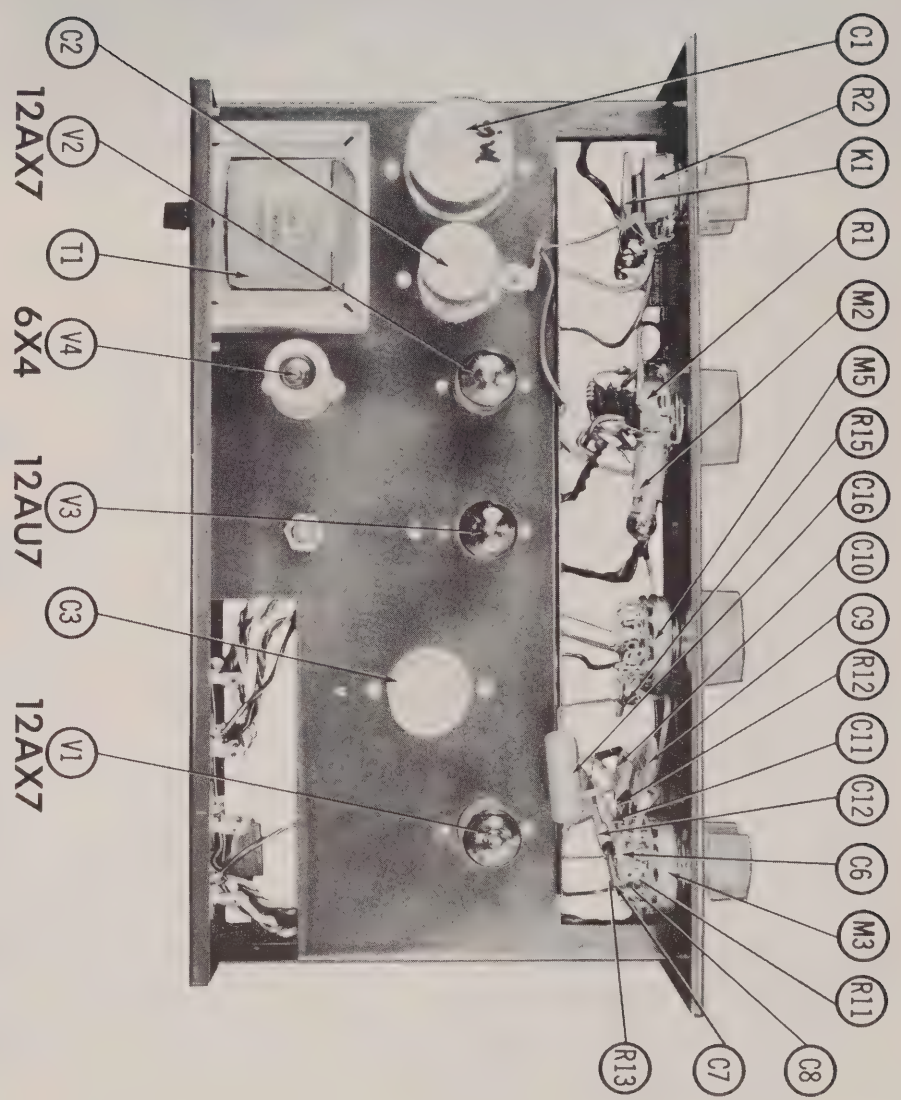
FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA GROMMES PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C5	100			1468-0001	D6-101	5W5T1	ED-100	MC235	1FM-31	
C6	1500						ED-1500			10%
C7	800						ED-800			10%
C8	330				DD-331	L10T33	ED-330			10%
C9	4000									10%
C10	2000									10%
C11	2000									10%
C12	1000						ED-1000			10%
C13	. 047	400		P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C14	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C15	. 047	400		P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C16	. 047	400		P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C17	1000						ED-1000			10%
C18	51			SI 51		L10Q51	GP-51			
C19	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	①
C20	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	①
C21	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	②
C22	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	②
C23	. 047	400		P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C24	20			SI 20	D6-200	LT6Q2	GP-20	UC-542	5GA-Q2	③
C25	. 047	400		P488N-047	DF-503	CUB4S47		GEM-4147	4TM-S47	
C26	. 1	400		P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	

① When C19 is 20000MMF, C20 is not used
② When C21 is 20000MMF, C22 is not used
③ Not used in some versions

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	GROMMES PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	500K	½	MLC500K2T	B T-160		Q18-133XX	UDT-283	Volume, Tap ② 100K & 200K
R2A	1Meg	½	MTC-1M	B-69	A47-1Meg-S	Q11-137	U54	Treble
B	Shaft			Not Req.	RS-2	Not Req.	Not Req.	
R3A	1Meg	½	MTC-1M	B-69	A47-1Meg-S	Q11-137	U54	Bass
B	Shaft			Not Req.	RS-2	Not Req.	Not Req.	
R4A	100Ω	2	KS-13790-L25	WN-101	A43-100	W11-084	R100L	① Hum (Wire Wound)
B	Shaft			Not Req.	FKS-1/4	SK5-Kit	Not Req.	

① Not used in Model 207

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		GROMMES PART No.	NOTES
	OHMS	WATT		
R5	47K			
R6	100K	1		
R7	1000Ω			
R8	1Meg			Note 1
R9	100K			
R10	1000Ω			Note 2
R11	100K			
R12	1Meg			
R13	3.3Meg			
R14	4.7Meg			
R15	100K			
R16	47K			
R17	22K			
R18	470K			
R19	100K			
R20	470K			
R21	100K			

ITEM No.	RATING		GROMMES PART No.	NOTES
	OHMS	WATT		
R22	1000Ω			Note 2
R23	100K			
R24	1000Ω			
R25	100K			
R26	1Meg			
R27	100K			
R28	1000Ω			Note 3
R29	220K			
R30	120K			Note 4
R31	47K			
R32	10K			
R33	2700Ω	1		Note 2
R34	2700Ω	1		Note 2
R35	10K			Note 2
R36	470K			Note 2
R37	22K			Note 2

Note 1. Some versions may use 3.3Meg in this application.
Note 2. Not used in Model 207.
Note 3. Some versions may use 2200Ω in this application.
Note 4. Some versions may use 47K 1W in this application.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	GROMMES PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC ② .200A	660VCT ② .010A	6.3VAC ② 1.65A		136P19A ①					

① Not used in Model 207

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	GROMMES PART No.	REPLACEMENT DATA
K1	Tone Coup. Net.	3000MMF, 3000MMF, 470MMF 68K, 68K, 68K, 10K	S191A (or) S191B	

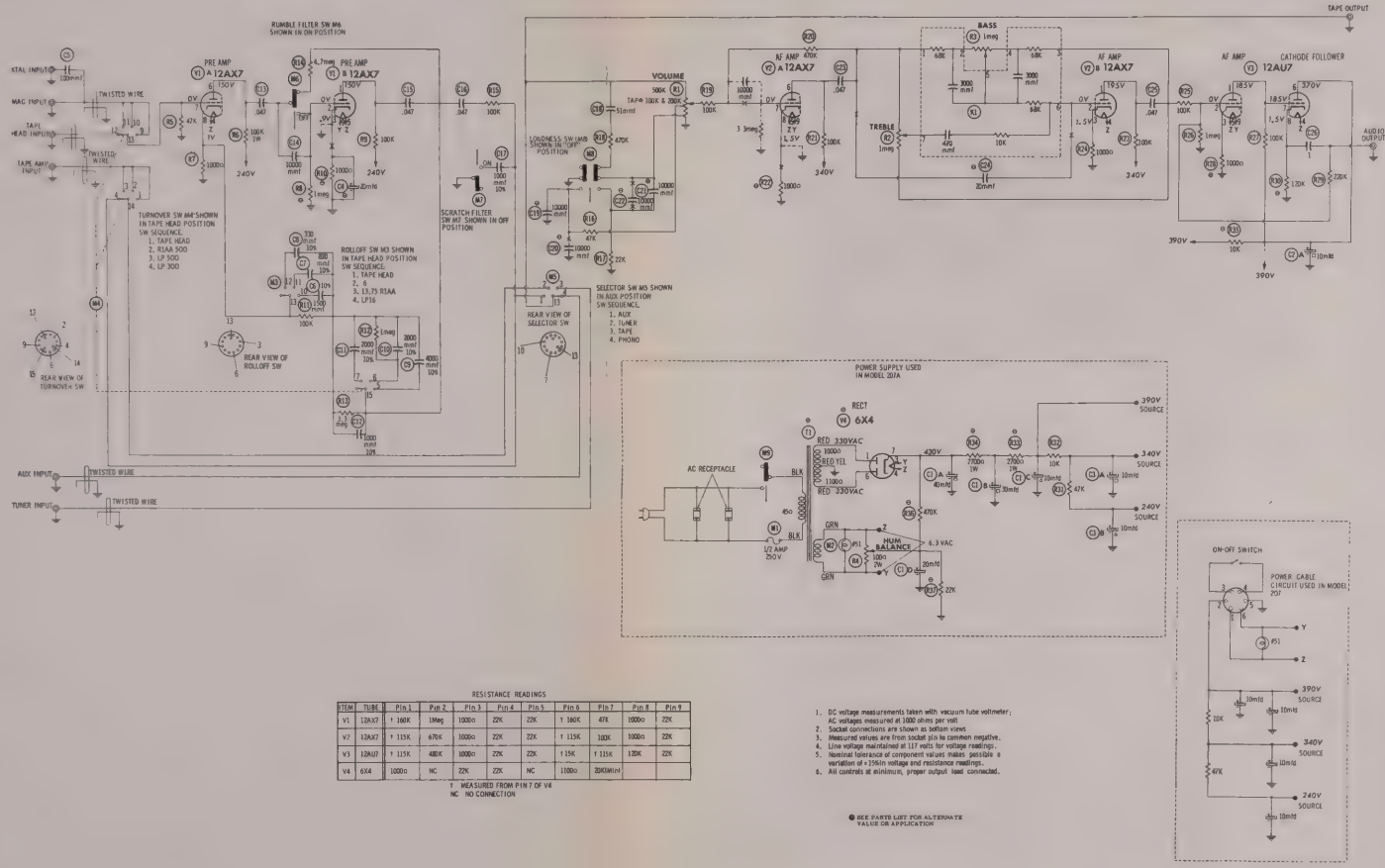
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			GROMMES PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	½A 250V	①		312.500 3AG ½A 250V	342001	AGC ½	HKP

① Not used in Model 207

MISCELLANEOUS

ITEM No.	PART NAME	GROMMES PART No.	NOTES
M2	Pilot Light		#51
M3	Switch		Roll-Off DB (Rotary Wafer Type)
M4	Switch		Turnover (Rotary Wafer Type)
M5	Switch		Selector (Rotary Wafer Type)
M6	Switch		Rumble Filter (Slide Type SPST)
M7	Switch		Scratch Filter (Slide Type SPST)
M8	Switch		Loudness (Slide Type DPST)
M9	Switch		Power On-Off (Slide Type SPST)


RUMBLE FILTER SW M6 SHOWN IN ON POSITION
XTAL INPUT
MAG INPUT
TAPE HEAD INPUT
TAPE AMP INPUT
TWISTED WIRE
PRE AMP 12AX7
PRE AMP B 12AX7
TURNOVER SW M4 SHOWN IN TAPE HEAD POSITION SW SEQUENCE. 1. TAPE HEAD 2. RIAA 500 3. LP 500 4. LP 300
ROLLOFF SW M3 SHOWN IN TAPE HEAD POSITION SW SEQUENCE. 1. TAPE HEAD 2. 6 3. 13.75 RIAA 4. LP16
REAR VIEW OF TURNOVER SW
REAR VIEW OF ROLLOFF SW
SCRATCH FILTER SW M7 SHOWN IN OFF POSITION
VOLUME
LOUDNESS SW M8 SHOWN IN "OFF" POSITION
SELECTOR SW M5 SHOWN IN AUX POSITION SW SEQUENCE. 1. AUX 2. TUNER 3. TAPE 4. PHONO
REAR VIEW OF SELECTOR SW
AUX INPUT
TUNER INPUT
AF AMP 12AX7
BASS
TREBLE
AF AMP 12AX7
AF AMP CATHODE FOLLOWER 12AU7
TAPE OUTPUT
AUDIO OUTPUT
POWER SUPPLY USED IN MODEL 20A
AC RECEPTACLE
RECT 6X4
RED 330VAC
HUM BALANCE
6.3 VAC
390V SOURCE
340V SOURCE
240V SOURCE
ON-OFF SWITCH
POWER CABLE CIRCUIT USED IN MODEL 20

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	↑ 160K	1Meg	1000Ω	22K	22K	↑ 160K	47K	1000Ω	22K
V2	12AX7	↑ 115K	470K	1000Ω	22K	22K	↑ 115K	100K	1000Ω	22K
V3	12AU7	↑ 115K	480K	1000Ω	22K	22K	↑ 15K	↑ 115K	120K	22K
V4	6X4	1000Ω	NC	22K	22K	NC	1100Ω	20KOhm		

↑ MEASURED FROM PIN 7 OF V4
NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt
2. Socket connections are shown as bottom views
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1957

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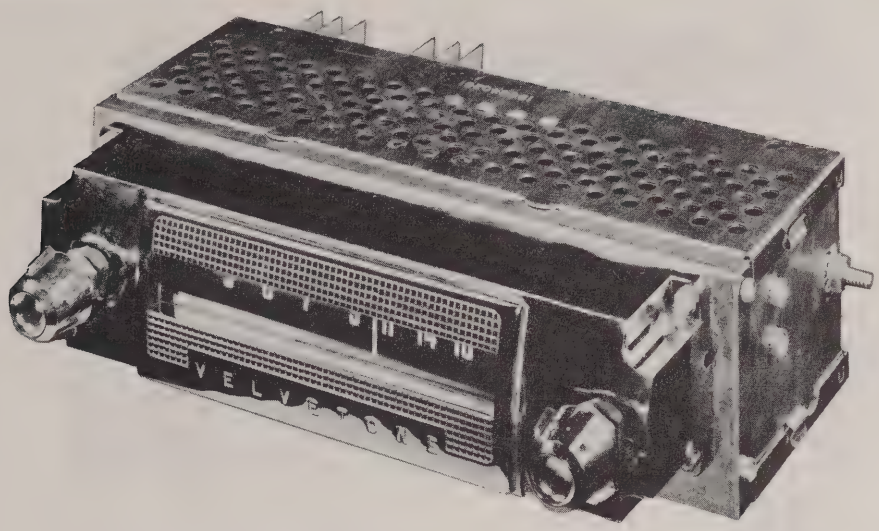
*TRADE MARK

RETMA MEMBER

MOPAR MODEL 624



PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

MOPAR
MODEL 624

TRADE NAME	Mopar Model 624 (For 1957 Dodge D66, D67, D70, D71, D72 Automobiles)
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
TYPE SET	Battery Operated Custom Built AM Automobile Receiver
TUBES (Five)	Types 12BL6 RF Amplifier, 12AD6 Converter, 12BL6 IF Amplifier, 12AE6 Det.-AVC-AF Amp., 12K5 Driver
POWER SUPPLY	12 Volt Storage Battery
RATING	1.6 Amp. @ 12.6 Volts DC
TUNING RANGE—BROADCAST	540KC-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Set volume control to maximum. Attenuate generator output to maintain 1.79 volts on output meter at all times. Use insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 12AD6 (V2). Low side to chassis.	455KC (400~ Mod.)	High frequency end stop	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	Fig. 1	Thru dummy to Antenna receptacle	1610KC	High frequency end stop	"	A5, A6, A7	"
	NOTE: It is not necessary to perform steps 3, 4, & 5 unless tuner has been tampered with or associated components have been replaced. Before proceeding with step 3 back tuning cores (A8, A9, A10) out of coils but not out of coil forms. Alignment tool, Part #66A76278 may be used.						
3.	Fig. 1	Thru dummy to Antenna receptacle	1610KC	High frequency end stop	Across voice coil	A5, A6, A7	Adjust for maximum output.
4.	"	"	1400KC	13/64" from high frequency end stop.	"	A8, A9, A10	Adjust for maximum output.
5.	"	"	1610KC	High frequency end stop	"	A5, A6, A7	Adjust for maximum output. Repeat steps 4 & 5.
6.	With radio installed in car and antenna fully extended, tune in a weak station near 1400KC and adjust A7 for maximum output.						

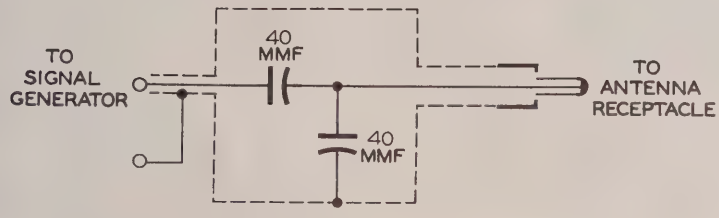


FIG. 1

TRANSISTOR BIAS ADJUSTMENT (R2)

After the transistor is replaced, the bias adjustment (R2) should be checked. To do this, connect the negative lead of a low range voltmeter to the junction of R17 and T2, and the positive lead to the junction of C1B and T2. Connect a power source of 12 Volts DC to the receiver and allow a 15 minute warm-up period. Adjust R2 for a reading of .51 volts on the voltmeter.

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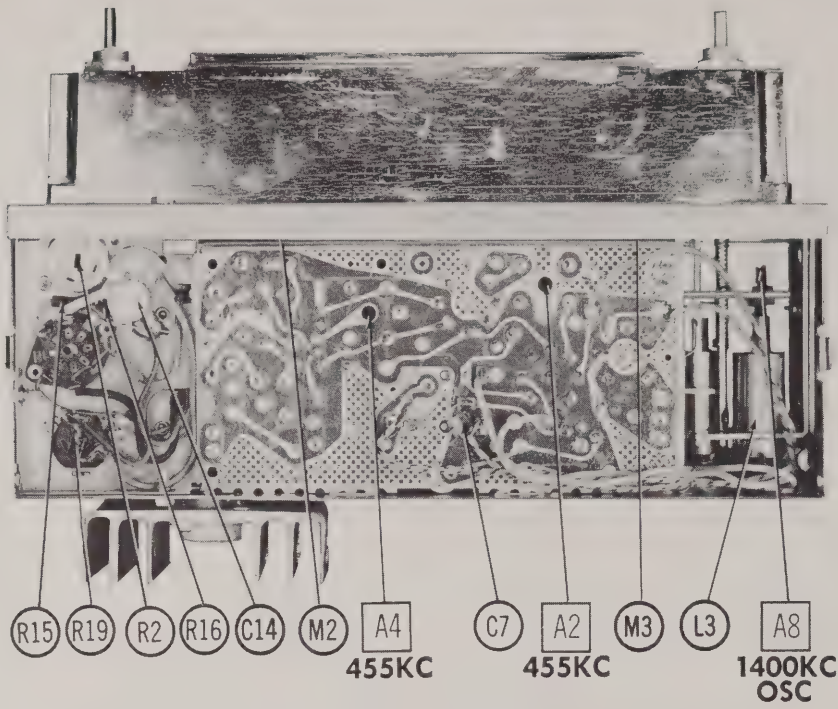
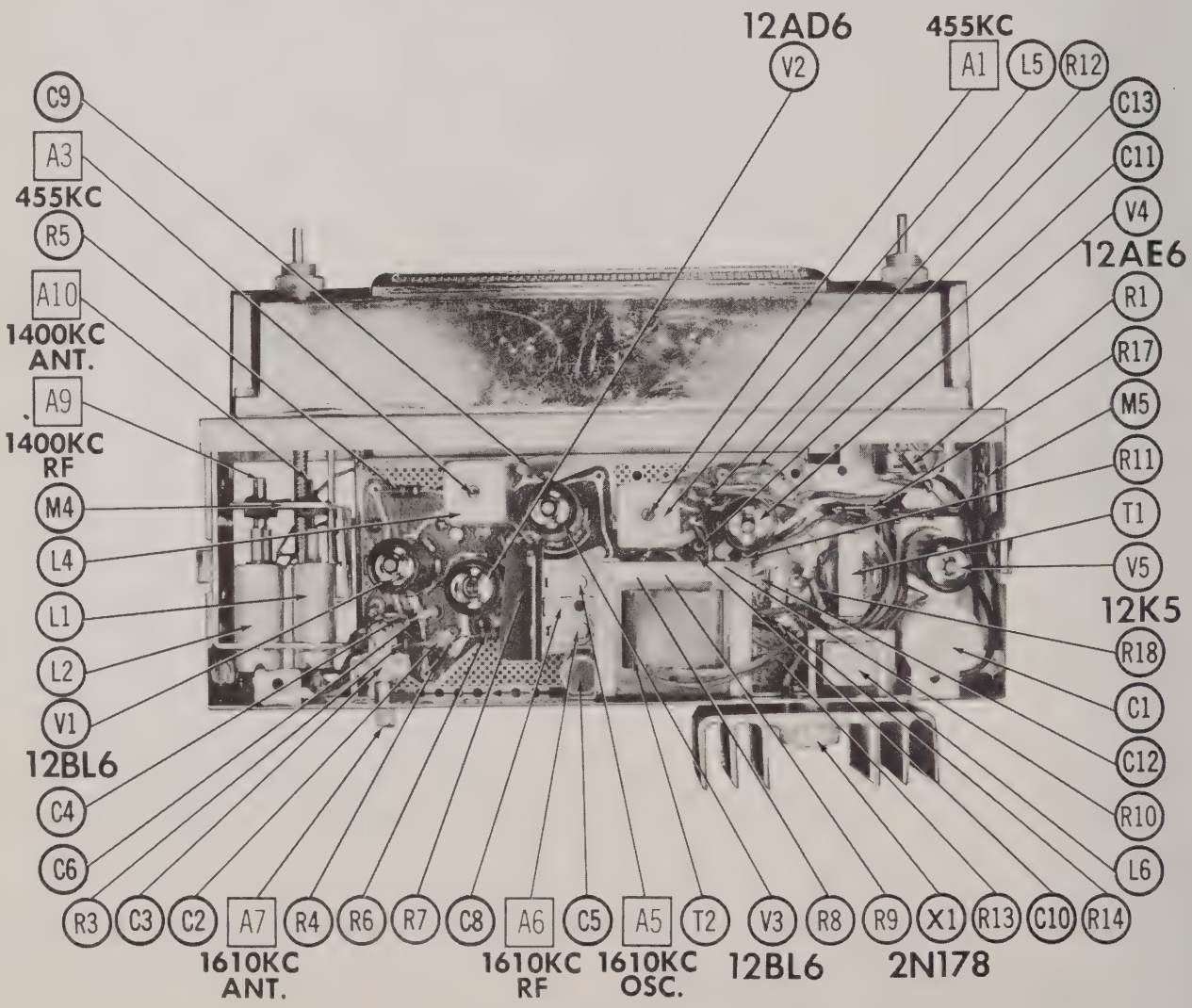


CHASSIS-BOTTOM VIEW



CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12BL6	
V2	Converter	12AD6	
V3	IF Amplifier	12BL6	

ITEM No.	USE	TYPE	NOTES
V4	Det. - AVC - AF Amp.	12AE6	
V5	Driver	12K5	

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N178	Output				Note 1.

Note 1. Manufacturer recommends that type 2N176 be used when replacing.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲100	16	23B539261	AFH2-02-10	B0045	WP200. 5			R2452 *
B	■500	16							

* Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	22		21R120539							10% N150
C3	50-240		20B532806							
C4	120		21K533470							N470
C5	. 02	200	8K122896			BC2S22J		ACE612	2SE-S22	
C6	27		21K533469		TCZ-27	C10Q27C	TCO-27			10% NPO ① ②
C7	8. 2			NPO-8. 2		C10V82C	TCO-8. 2			
C8A	10									②
B	7. 5-75		20B540632							
C	47									
D	420-490									
C9	10000		21B533471	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C10	27		21K533469		TCZ-27	C10Q27C	TCO-27			10% NPO
C11	100		21K538726	BPD-0001	DD-101	L10T1	ED-100	UC-531	5GA-T1	
C12	10000		21B533471	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C13	10000		21B533471	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C14	1000		21R410127	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	

① Not used in some versions ② When replacing C8, mfgr. recommends omitting C7.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1Meg	½	18K540511	AB-70	A47-1Meg-Z	Q13-137	U53	Volume
B	Shaft			AK-8	RS-3/16	NQ	DS-37	
C	Switch			KB-4	SWE-13	76-1	US-26	
R2	220Ω	2	18K540653		39-200			Emitter Bias Adj.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		MOTOROLA PART No.	NOTES
	OHMS	WATT		
R3	100K		6R6075	
R4	1Meg		6R6004	
R5	27Ω		6R5683	
R6	470K		6R6032	
R7	33K		6R6012	

ITEM No.	RATING		MOTOROLA PART No.	NOTES
	OHMS	WATT		
R8	4. 7Meg		6R2122	
R9	4. 7Meg		6R2122	
R10	1. 5Meg		6R3966	
R11	10Meg		6R2109	
R12	470K		6R6032	

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING		MOTOROLA PART No.	NOTES
	OHMS	WATT		
R13	68Ω		6R6007	
R14	1000Ω		6R6301	
R15	3. 3Meg		6R2118	
R16	15Ω		6R410033	

ITEM No.	RATING		MOTOROLA PART No.	NOTES
	OHMS	WATT		
R17	15Ω	1	6RI18206	
R18			6K540634	Note 1
R19	100Ω		6R6018	

Note 1. Temperature compensated unit, 10Ω @ 25° C.

TRANSFORMER (DRIVER)

ITEM No.	Turns Ratio		REPLACEMENT DATA						NOTES
	PRI.	SEC.	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	6. 5:	1	25B540500						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	28Ω	6-8Ω	25C540466						

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
SP1	5" X 7"	PM	6-8Ω	50K540003	57A21Z7	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		MOTOROLA PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Antenna Coil	24B540356				Note 1
L2	RF Coil	24B540354				Note 1
L3	Osc. Coil	24B540355				Note 1
L4	Input IF	24K540633	16-6780	BC-356	13-PC1	
L5	Output IF	24K540633	16-6780	BC-357	13-PC2	

Note 1. Part of tuner M4 (MT-197) Part #77K540226.

FILTER CHOKE

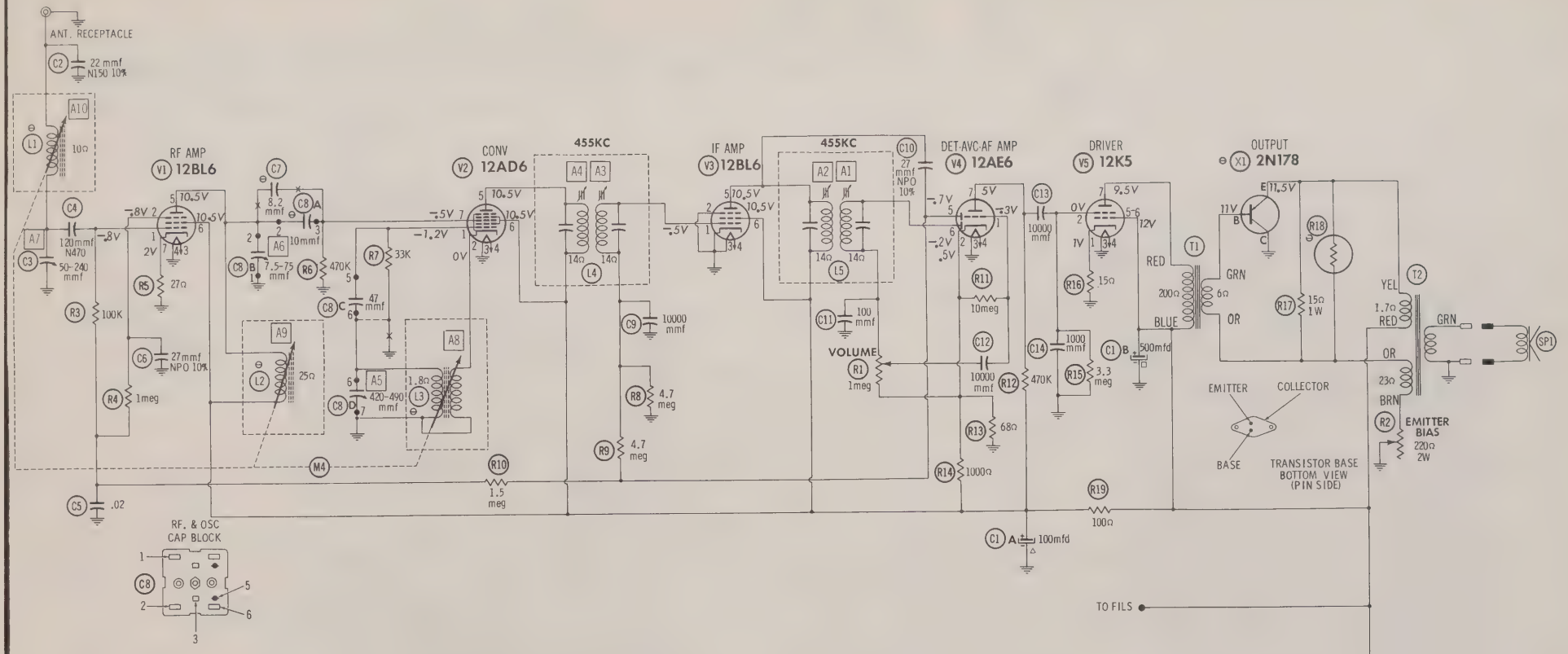
ITEM No.	RATINGS			REPLACEMENT DATA					
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L6	1. 6A	. 6Ω	3. 5 Mil. Hy	25K540449					

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MOTOROLA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	SFE	7½A 32V	65R122346		30307. 5 (7AG 7½A 32V)	155009	SFE 7½	HDH

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M2	Pilot Lamp	6R10867	#44
M3	Pilot Lamp	6R10867	#44
M4	Tuner	77K540226	MT-197, Complete
M5	Spark Plate	48K539953	Selenium



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BL6	9.5Meg	10.5Meg	1.2Ω	0Ω	†125Ω	†100Ω	27Ω
V2	12AD6	33K	1.8Ω	0Ω	1.2Ω	†114Ω	†100Ω	470K
V3	12BL6	4.7Meg	0Ω	0Ω	1.2Ω	†114Ω	†100Ω	0Ω
V4	12AE6	10Meg	68Ω	0Ω	1.2Ω	9.4Meg	1Meg	†470K
V5	12K5	15Ω	3.3Meg	0Ω	1.2Ω	† 0Ω	† 0Ω	†200Ω

RESISTANCE MEASUREMENTS OF TRANSISTOR CIRCUIT NOT TAKEN BECAUSE OF WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE

† MEASURED FROM JUNCTION OF R19 AND L6

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes posssible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DIAL CORD STRINGING

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1957

H. H. SCOTT
MODEL 240

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

H. H. SCOTT
MODEL 240

H. H. SCOTT
MODEL 240

TRADE NAME	H. H. Scott Model 240
MANUFACTURER	Hermon Hosmer Scott, Inc., 111 Powdermill Road, Maynard, Mass.
TYPE SET	AC Operated 2 Channel Audio Amplifier
TUBES (Five)	Types 12AX7 AF Amplifier, 12AX7 AF Amp.-Phase Inv., (2) 6CA7/EL34 Output, 5U4GA Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING 1.13 Amp. @ 117 Volts AC (115 Watts)

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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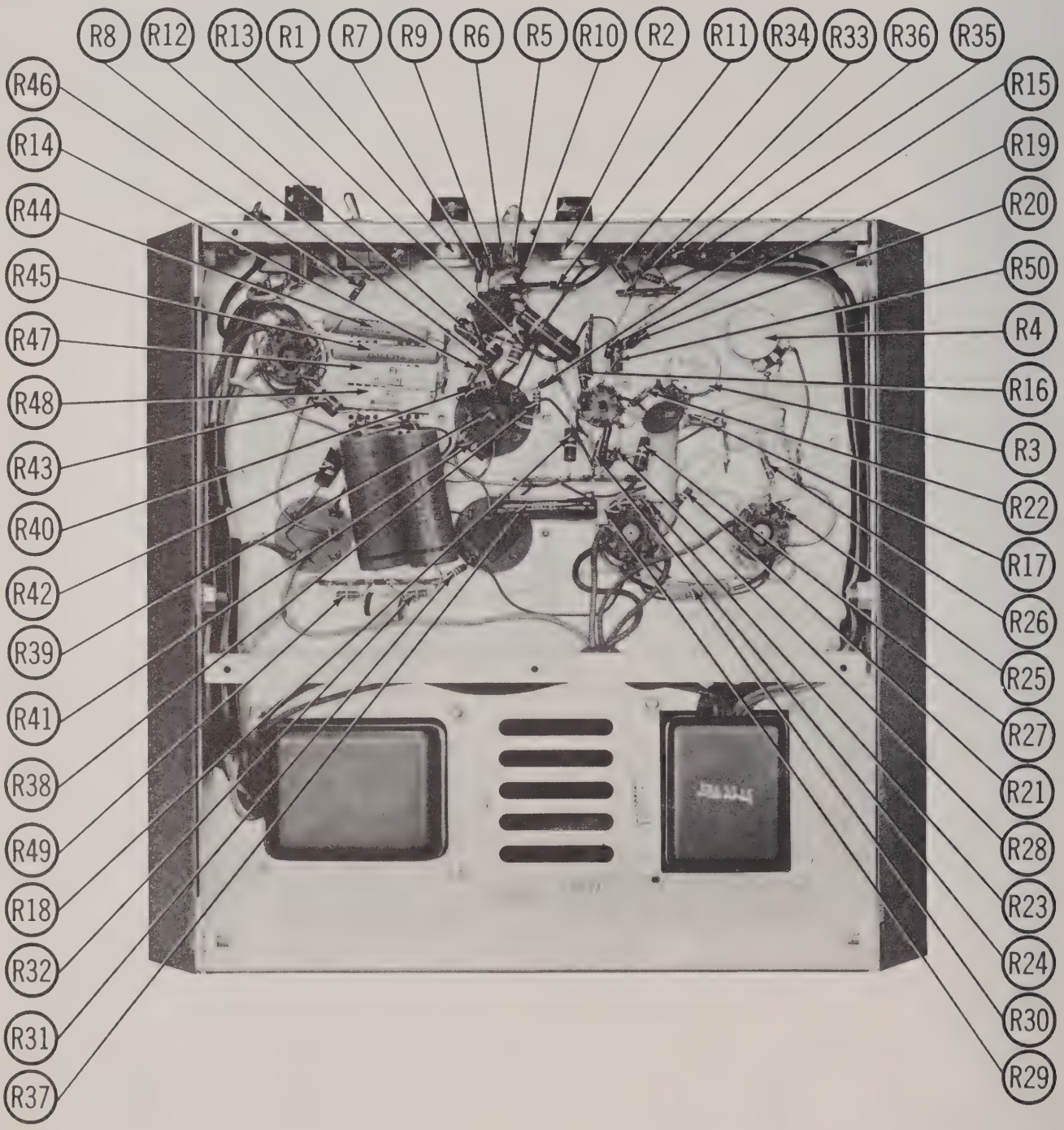
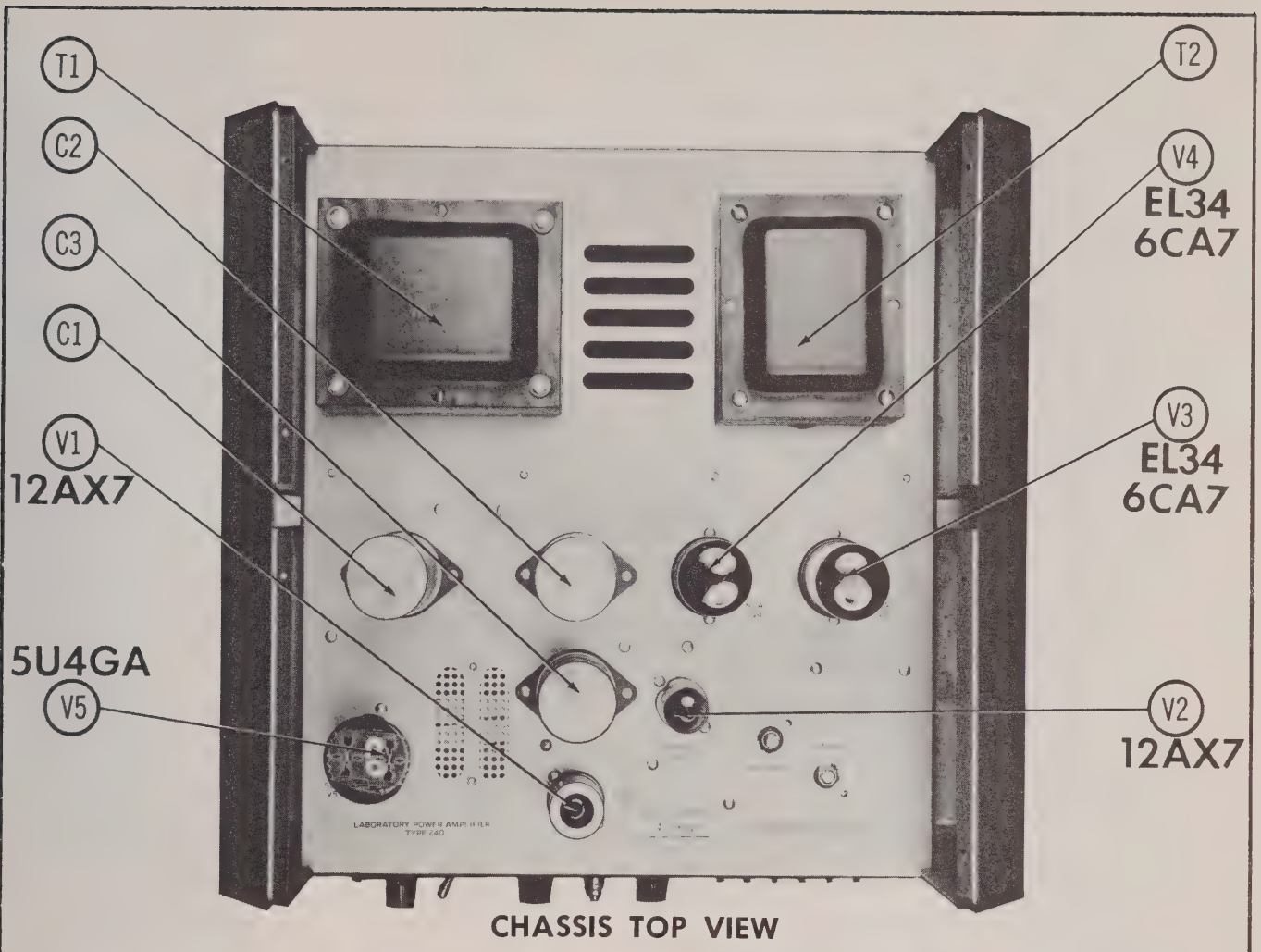
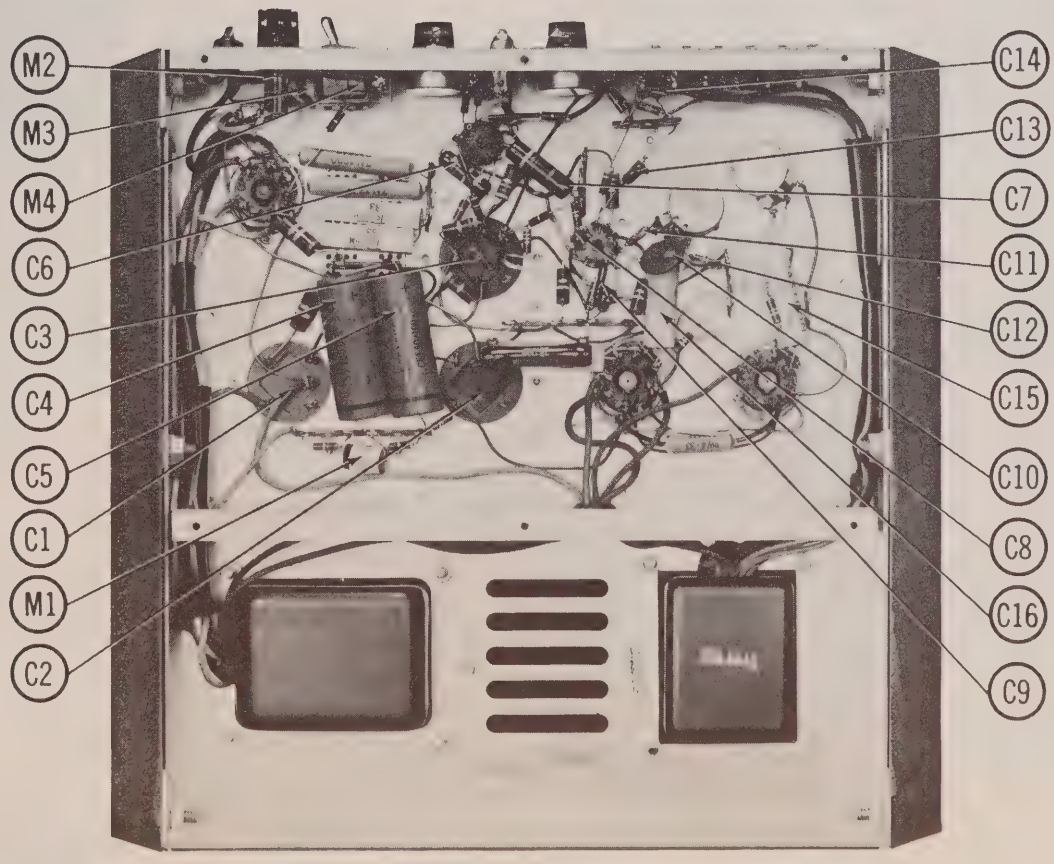


CHASSIS BOTTOM VIEW-RESISTOR IDENTIFICATION



CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA					
	PRI.	SEC. 1	SEC. 2	SEC. 3	H. H. SCOTT PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117VAC @ 1.13A	900VCT @ .104A	5VAC @ 3A	36VAC @ .001A SEC. 4 6.3VAC @ 3.5A	TR-12-2					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	H. H. SCOTT PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	4200Ω CT	70V Tap @ 16Ω, 8Ω, 4Ω	TRA-10-15						

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	H. H. SCOTT PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.001A		1159	CR20	10	

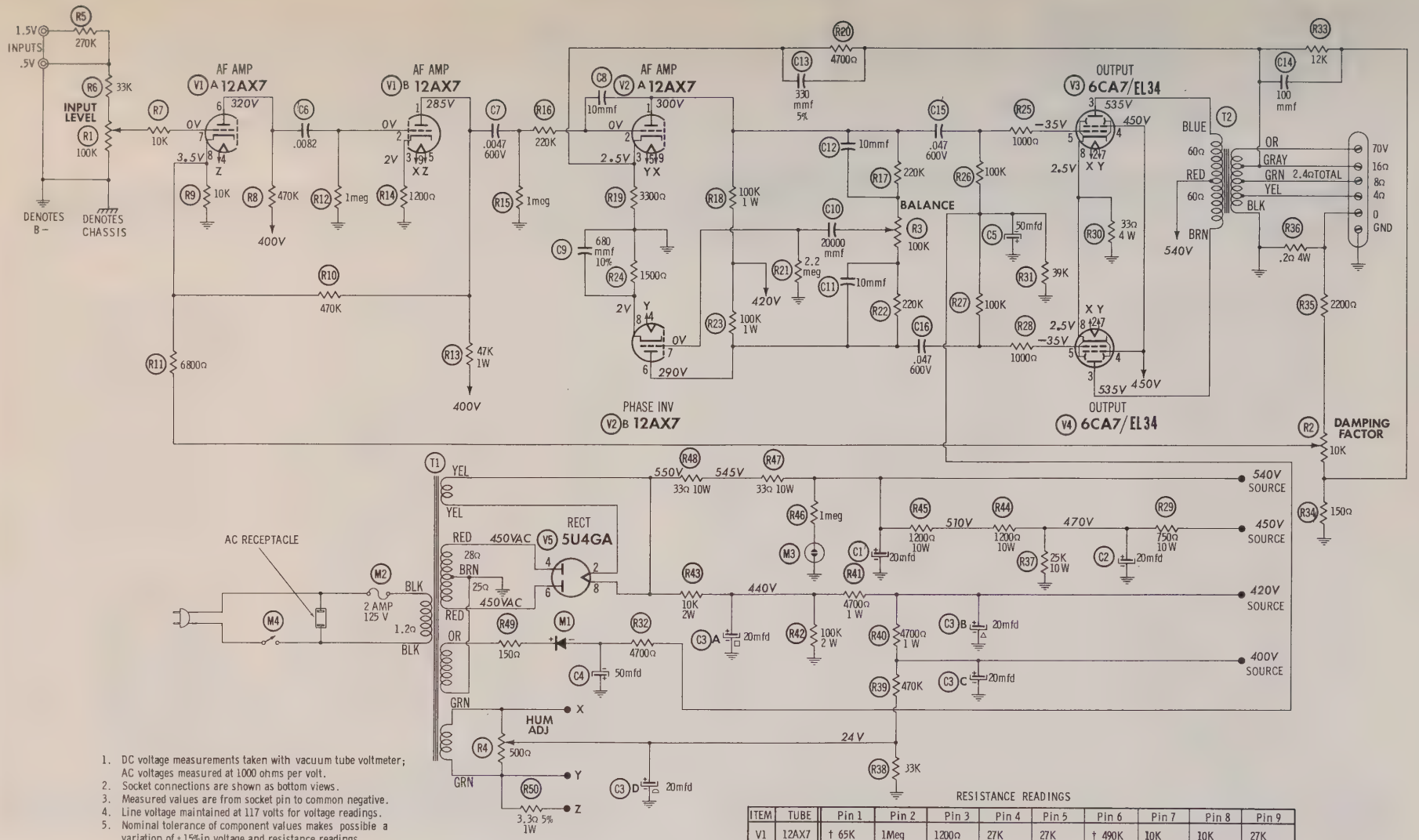
PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			H. H. SCOTT PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	3AG	2A 125V Slo-Blo			313002. (3AG 2A 125V S/B)	342001	MDL2	HKP

MISCELLANEOUS

ITEM No.	PART NAME	H. H. SCOTT PART No.	NOTES
M3 M4	Indicator Lamp Switch		Neon Bulb Power On-Off (Toggle Switch)



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	† 65K	1Meg	1200Ω	27K	27K	† 490K	10K	10K	27K
V2	12AX7	† 115K	1.2Meg	3300Ω	27K	27K	† 115K	2.2Meg	1500Ω	27K
V3	6CA7 EL34	0Ω	27K	† 125Ω	† 3200Ω	140K	TP	27K	33Ω	
V4	6CA7 EL34	0Ω	27K	† 125Ω	† 3200Ω	140K	TP	27K	33Ω	
V5	5U4GA	NC	20K(Min)	NC	28Ω	TP	25Ω	TP	20K(Min)	

† MEASURED FROM PIN 8 OF V5
NC NO CONNECTION
TP TIE POINT

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amplifier	12AX7	
V2	AF Amp. - Phase Inv.	12AX7	
V3	Output	6CA7/EL34	
V4	Output	6CA7/EL34	
V5	Rectifier	5U4GA	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	H. H. SCOTT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	20	600		GL600V16	BRHV620	TC92 & TC92			R2442 *
C2	20	600		GL600V16	BRHV620	TC92 & TC92			R2442 *
C3A	■20	475		AFH4-19-20	DO179. 5	FP475	TMQ-12	Q-075 MT-4720	TVL-4834
B	▲20	475							
C	20	475							
D	▲20	475							
C4	50	100		PRS150V50	BR5015	TC49	TD-50-150	MT-1550	TVA-1414
C5	50	100		PRS150V50	BR5015	TC49	TD-50-150	MT-1550	TVA-1414

* Non-Catalog Item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	H. H. SCOTT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C6	.0082	400		P488N-008		CUB16D8		GEM-6282	4TM-D8	
C7	.0047	600		BPD-005	D6-472	CUB6D47	GP-4700	GEM-6247	6TM-D47	
C8	10			BPD-00001	DD-100	L10Q1	ED-10	UC-541	5GA-Q1	
C9	680			1464-00068	D6-681	5R5T68	ED-680		MS-368	10%
C10	20000			BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	
C11	10			BPD-00001	DD-100	L10Q1	ED-10	UC-541	5GA-Q1	
C12	10			BPD-00001	DD-100	L10Q1	ED-10	UC-541	5GA-Q1	
C13	330			1469-00033		5R5T33			MS-333	5%
C14	100			1468-0001	D6-101	5W5T1	ED-100	UC-531	1FM-31	
C15	.047	600		BPD-05	DF-503	CUB6S47		GEM-6147	6TM-S47	
C16	.047	600		BPD-05	DF-503	CUB6S47		GEM-6147	6TM-S47	

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	H. H. SCOTT PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	100K	½	RCV-100K-3S	B-40	A47-100K-S	Q11-128	U41	Input Level
B	Shaft			Not Req.	RS-2	PQ	Not Req.	
R2A	10K	½	RCV-10K-3S	B-14	A47-10K-S	Q11-116	U20	Damping Factor
B	Shaft			Not Req.	RS-2	Not Req.	Not Req.	
R3A	100K	½	RCV-100K-3S	B-40	A47-100K-S	Q11-128	U41	Balance
B	Shaft			Not Req.	RS-2	PQ	Not Req.	
R4A	500Ω	½	RVC-500-S	AB-4	A47-500-S	Q11-103	U2	Hum Adj.
B	Shaft			AK-1	FKS-1/4	RQ	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		H. H. SCOTT PART No.	NOTES
	OHMS	WATT		
R5	270K			
R6	33K			
R7	10K			
R8	470K			
R9	10K			
R10	470K			
R11	6800Ω			
R12	1Meg			
R13	47K	1		
R14	1200Ω			
R15	1Meg			
R16	220K			
R17	220K			
R18	100K	1		
R19	3300Ω			
R20	4700Ω			
R21	2. 2Meg			
R22	220K			
R23	100K	1		
R24	1500Ω			
R25	1000Ω			
R26	100K			
R27	100K			

ITEM No.	RATING		H. H. SCOTT PART No.	NOTES
	OHMS	WATT		
R28	1000Ω			
R29	750Ω	10		
R30	33Ω	4		
R31	39K			
R32	4700Ω			
R33	12K			
R34	150Ω			
R35	2200Ω			
R36	. 2Ω	4		
R37	25K	10		
R38	33K			
R39	470K			
R40	4700Ω	1		
R41	4700Ω	1		
R42	100K	2		
R43	10K	2		
R44	1200Ω	10		
R45	1200Ω	10		
R46	1Meg			
R47	33Ω	10		
R48	33Ω	10		
R49	150Ω			
R50	3. 3Ω 5%	1		

PHOTOFACT* Folder

*TRADE MARK

RETMA MEMBER RADIO-ELECTRONICS-TELEVISION MANUFACTURERS ASSOCIATION

SILVERTONE
MODELS 7224, 8224 (Ch. 528.46400)

SILVERTONE
MODELS 7224, 8224 (Ch. 528.46400)

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

SILVERTONE
MODELS 7224, 8224 (Ch. 528.46400)

TRADE NAME	Silvertone Models 7224, 8224 (Ch. 528.46400)
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan Ave., Chicago, Illinois
TYPE SET	Three Power Portable 4 Band AM Receiver
TUBES (Five)	Types 1U4 RF Amplifier, 1L6 Converter, 1U4 IF Amplifier, 1U5 Det.-AVC-AF Amp., 3V4 Output
POWER SUPPLY	110-120 Volts AC-DC (or) 9 Volts "A" Supply & 90 Volts "B" Supply in Pack Form
RATING	.15 Amp. @ 117 Volts AC (or) 65MA @ 9 Volts DC & 13MA @ 90 Volts DC (10 Watts)

TUNING RANGE

Band 1	190-410KC	Band 3	1.9-6.25MC
Band 2	535-1630KC	Band 4	5.8-18.25MC

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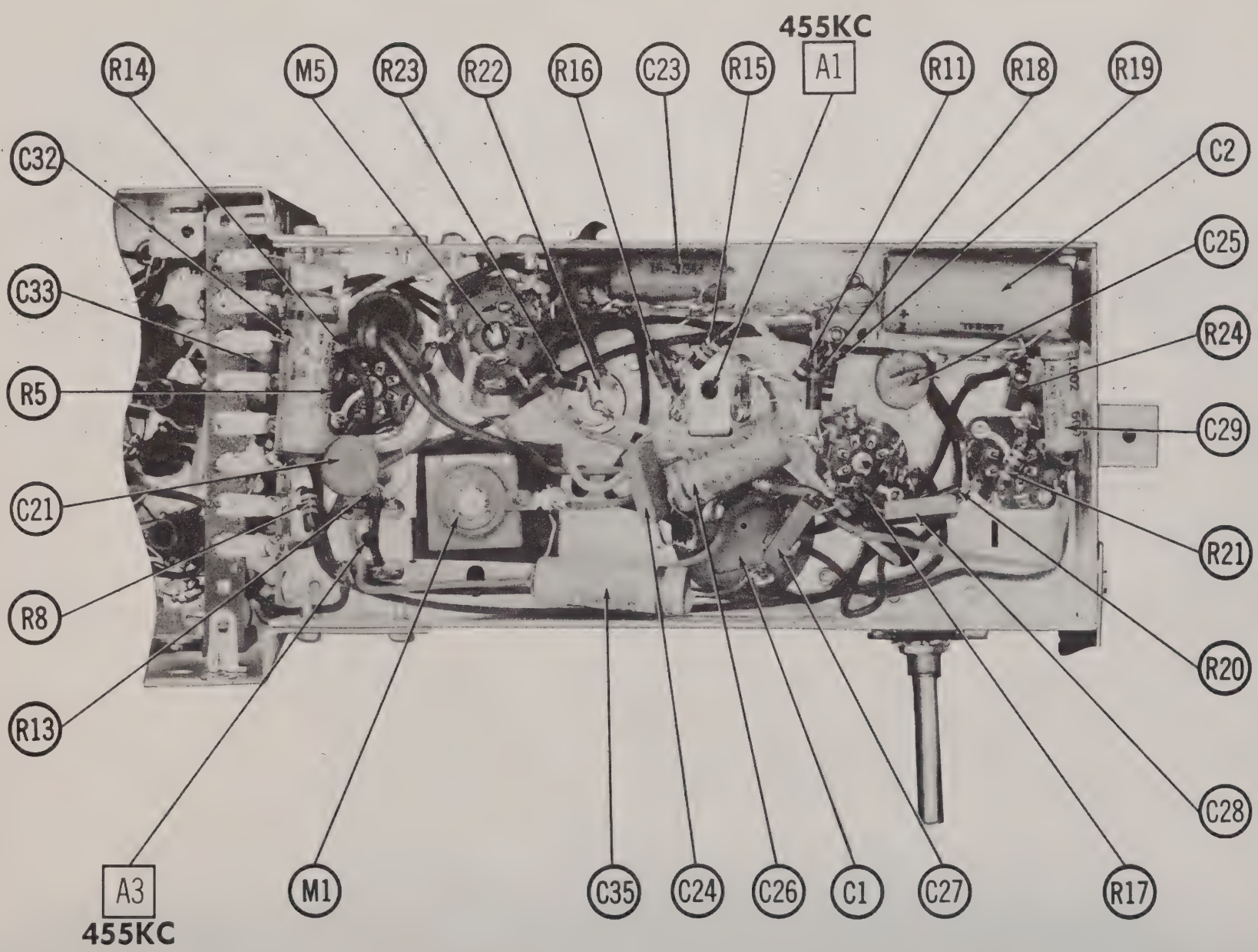
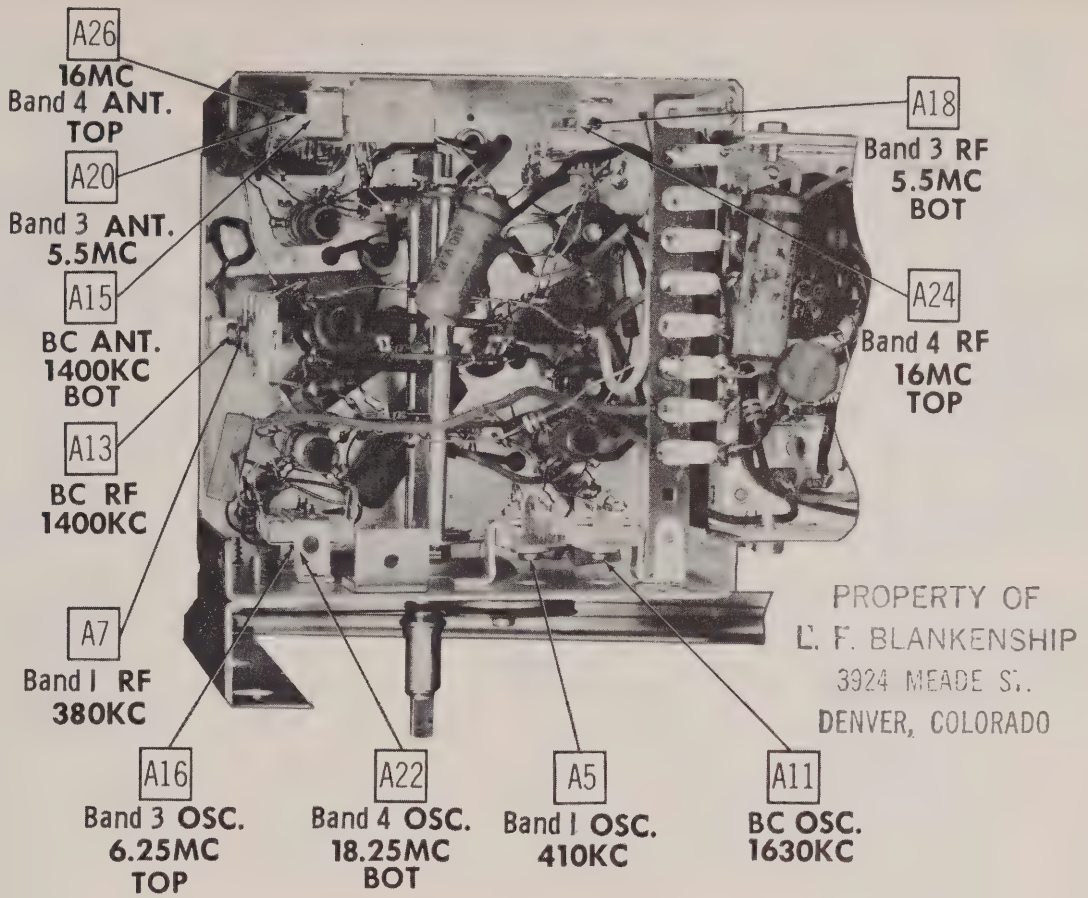
H228

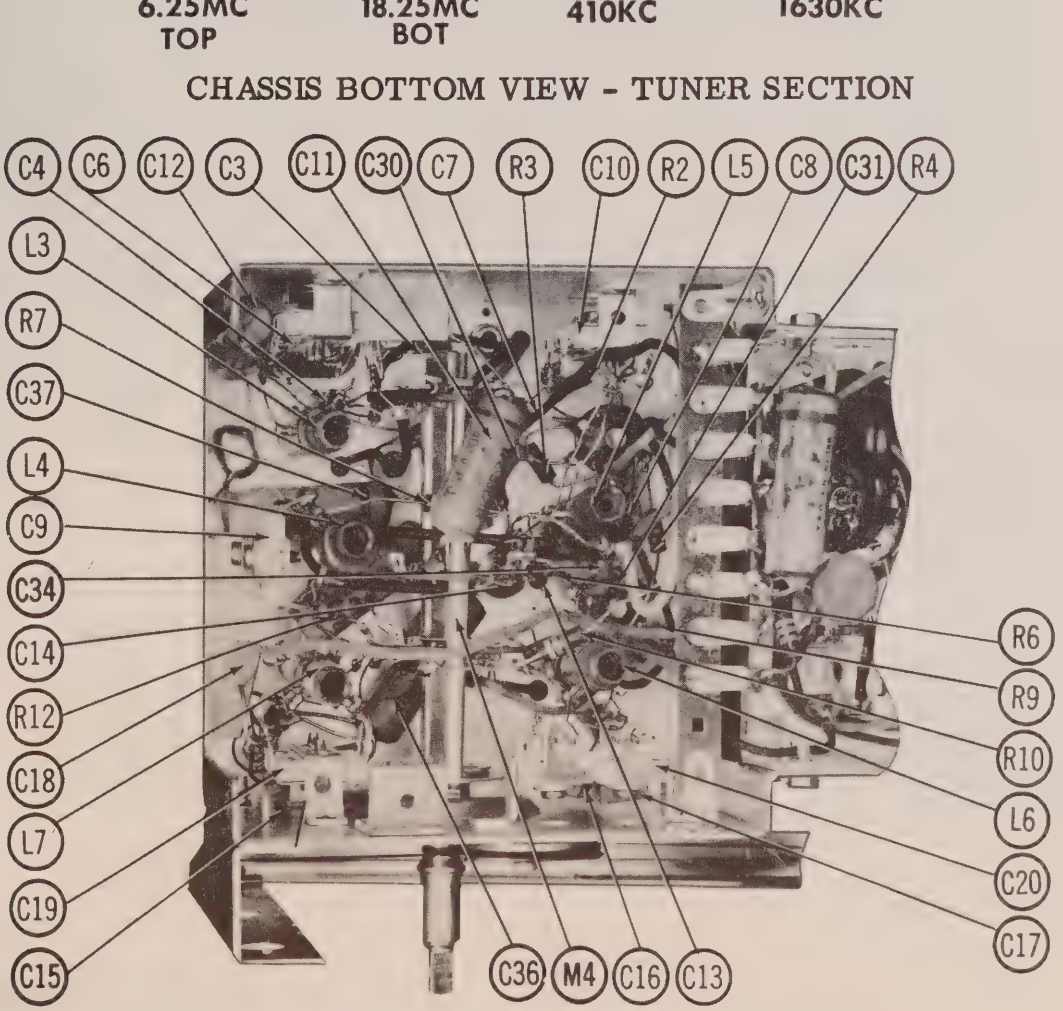
FOLDER 11



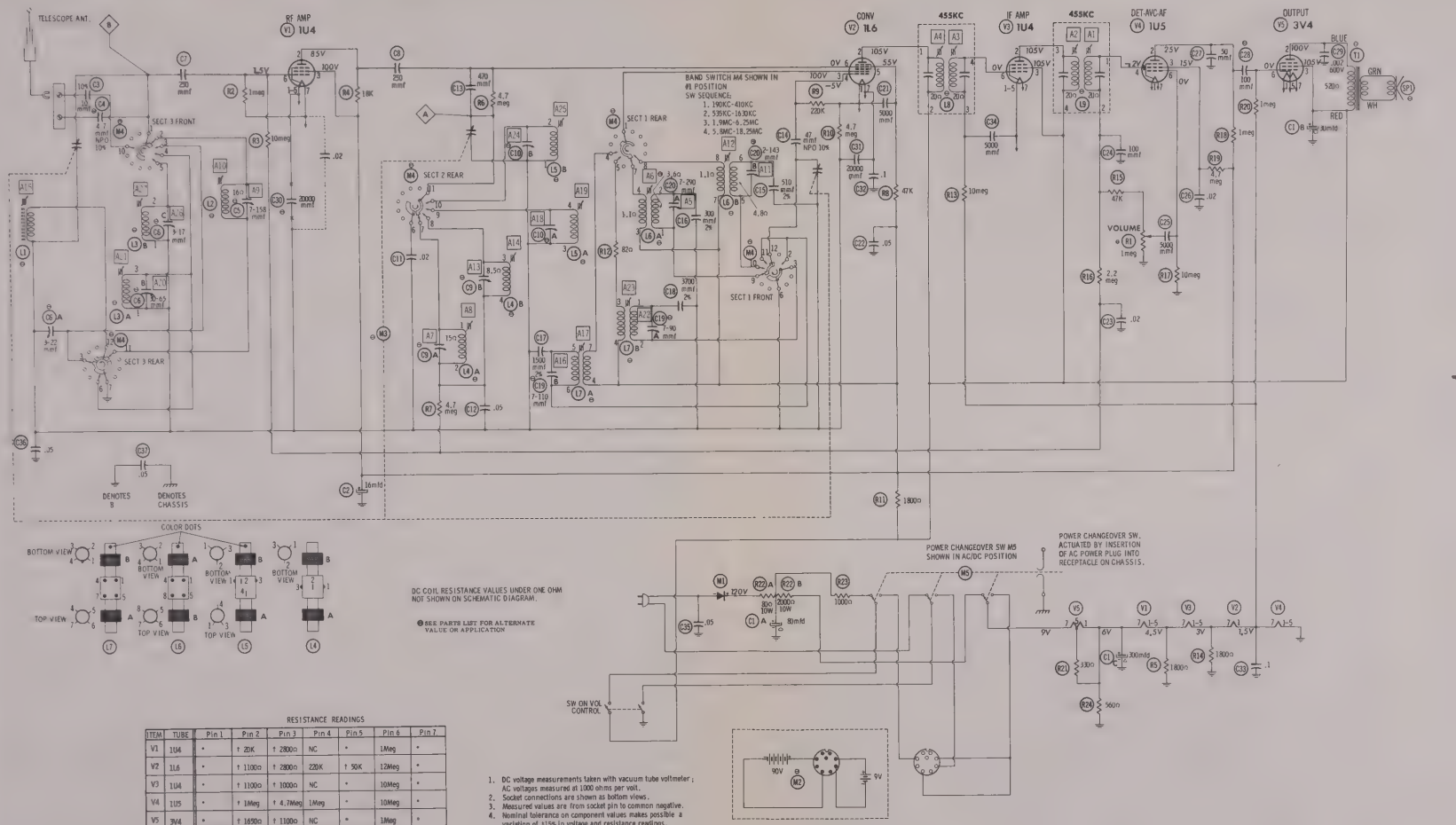
CHASSIS BOTTOM VIEW



CHASSIS BOTTOM VIEW - TUNER SECTION



CHASSIS BOTTOM VIEW - TUNER SECTION



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	1U4	*	↑ 25K	↑ 2800Ω	NC	*	1Meg	*
V2	1L6	*	↑ 1100Ω	↑ 2800Ω	220K	↑ 50K	12Meg	*
V3	1U4	*	↑ 1100Ω	↑ 1000Ω	NC	*	10Meg	*
V4	1U5	*	↑ 1Meg	↑ 4.7Meg	1Meg	*	10Meg	*
V5	3V4	*	↑ 1690Ω	↑ 1100Ω	NC	*	1Meg	*

* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.
↑ MEASURED FROM OUTPUT OF M1.
NC NO CONNECTION.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1957

382-11

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use battery power, if possible. If AC power is used, use an isolation transformer when available. If not, connect a..1MFD capacitor in series with low side of the signal generator and B-.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to RF stator of tuning gang. Low side to chassis.	455KC (400∿Mod)	2	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation.
2.	"	"	410KC (400∿ Mod)	1	"	"	A5	Adjust for maximum output.
3.	"	"	190KC	"	Tuning gang closed	"	A6	Adjust for maximum output. Repeat steps 2 and 3.
4.	"	High side to ant. stator of tuning gang. Low side to chassis.	380KC	"	380KC	"	A7	Adjust for maximum output.
5.	"	"	220KC	"	220KC	"	A8	"
6.		Loop	380KC	"	380KC	"	A9	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
7.		"	220KC	"	220KC	"	A10	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Repeat steps 4, 5, 6 and 7.
8.	.1MFD	High side to RF stator of tuning gang. Low side to chassis.	1630KC (400∿ Mod)	2	Tuning gang fully open	"	A11	Adjust for maximum output.
9.	"	"	535KC	"	Tuning gang fully closed	"	A12	Adjust for maximum output. Repeat steps 8 and 9.
10.	"	High side to ant. stator of tuning gang. Low side to chassis.	1400KC	"	1400KC	"	A13	Adjust for maximum output.
11.	"	"	600KC	"	600KC	"	A14	"
12.		Loop	1400KC	"	1400KC	"	A15	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Repeat steps 10, 11 and 12.
13.	.1MFD	High side to RF stator of tuning gang. Low side to chassis.	6.25MC (400∿ Mod)	3	Tuning gang fully open.	Across voice coil	A16	Adjust for maximum output.
14.	"	"	1.9MC	"	Tuning gang fully closed.	"	A17	Adjust for maximum output. Repeat steps 13 and 14.
15.	"	High side to ant. stator of tuning gang. Low side to chassis.	5.5MC	"	5.5MC	"	A18	Adjust for maximum output while rocking tuning gang.
16.	"	"	2.4MC	"	2.4MC	"	A19	"
17.	"	High side to ext. ant. terminal. Low side to chassis.	5.5MC	"	5.5MC	"	A20	"
18.	"	"	2.4MC	"	2.4MC	"	A21	Adjust for maximum output while rocking tuning gang. Repeat steps 15, 16, 17 and 18.
19.	"	High side to RF stator of tuning gang. Low side to chassis.	18.25MC (400∿ Mod)	4	Tuning gang fully open	"	A22	Adjust for maximum output.
20.	"	"	5.8MC	"	Tuning gang fully closed	"	A23	Adjust for maximum output. Repeat steps 19 and 20.
21.	"	High side to ant. stator of tuning gang. Low side to chassis.	16MC	"	16MC	"	A24	Adjust for maximum output while rocking tuning gang.
22.	"	"	7MC	"	7MC	"	A25	"
23.	"	High side to ext. ant. terminal. Low side to chassis.	16MC	"	16MC	"	A26	"
24.	"	"	7MC	"	7MC	"	A27	Adjust for maximum output while rocking tuning gang. Repeat steps 21, 22, 23 and 24.

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	1U4	
V2	Converter	1L6	
V3	IF Amplifier	1U4	
V4	Det.-AVC-AF Amp.	1U5	
V5	Output	3V4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲80	150	18-305 ①	AFH3-82-40	XC0604	FP311.15	TMT-170	Q-110 MTH-2525	TVL-3431.8
B	■30	150							
C	▲300	25							
C2	16	150	18-306 ②	PRS150V16	BBR16-150	TC44	TD-16-150	MT-1516	TVA-1409

① Part #18-9-3 used in Model 8224.
② Part #18-14-0 used in Model 8224.

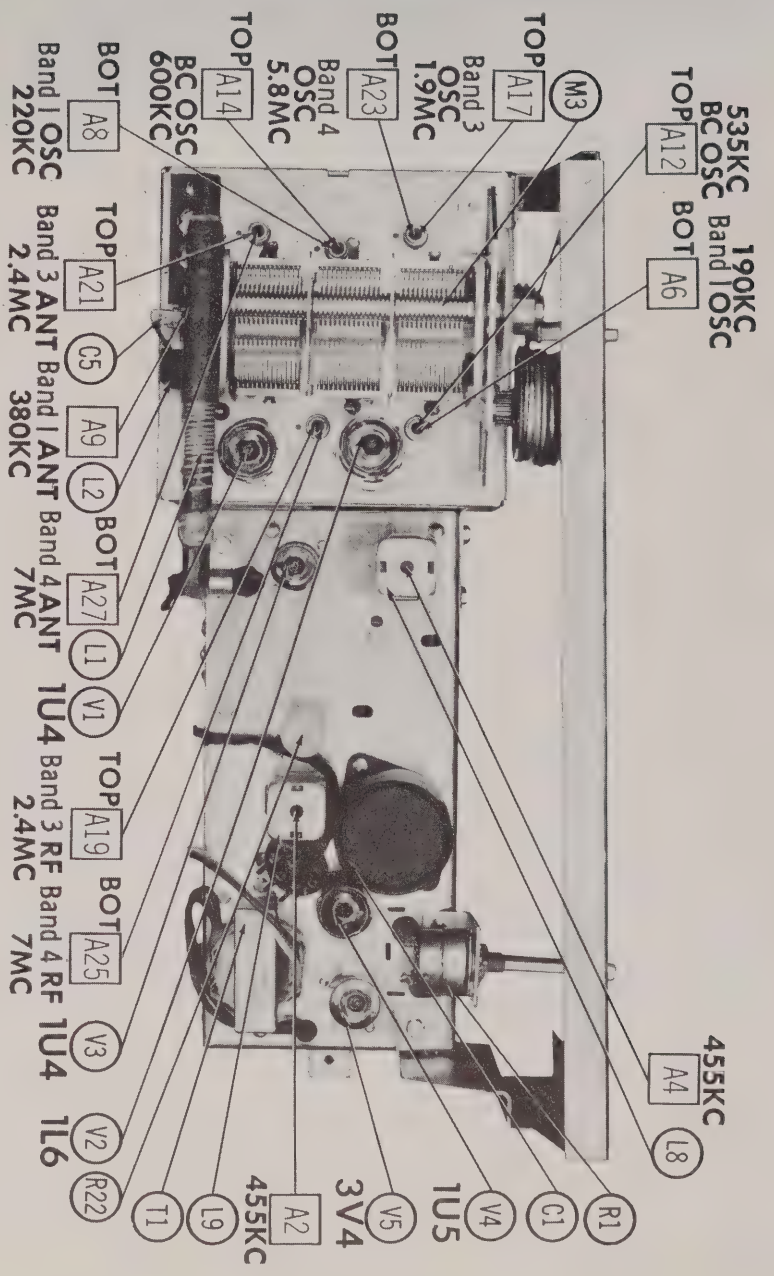
FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA SILVERTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C3	10		15-10011	NPO-SI 10	D6-100	L10Q1	ED-10	ZT-541	5TCC-Q1	
C4	4.7		15-479611	NPO-SI 4.7	TCZ-4R7	C10V47C	TCO-4.7	ZT-5547	5TCCB-V47	NPO 10%①
C5	7-158		20-154							②
C6A	3-22									③
B	30-65		20-155							③
C	3-17									③
C7	250		15-25166	SI 250	D6-251	LT6T25	GP-250	UC-5325	5GA-T25	
C8	250		15-25166	SI 250	D6-251	LT6T25	GP-250	UC-5325	5GA-T25	
C9A			20-159							④
B										④
C10A			20-158							⑤
B										⑤
C11	.02	400	16-20343	P488N-02	DD-203	CUB4S2	ED-02	GEM-412	4TM-S2	
C12	.05	400	16-50323	P488N-05	DF-503	CUB4S5		GEM-415	4TM-S5	
C13	470		15-47117	BPD-00047	DD-471	BYA10T47	ED-471	UC-5347	5GA-T47	
C14	47		15-470111	NPO-SI 47	TCZ-47	C10Q47C	TCO-47	ZT-5447	5TCC-Q47	NPO 10%
C15	510		17-51116							2%
C16	300		17-30116							2%
C17	1500		17-15216							2%
C18	3700		17-37216							2%
C19A	7-90		20-157							⑥
B	7-110									⑥
C20A	7-290		20-156							⑦
B	2-143									⑦
C21	5000		15-50217	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C22	.05	200	16-50323	P288N-05	DF-503	CUB2S5		GEM-415	4TM-S5	
C23	.02	400	16-20343	P488N-02	DD-203	CUB4S2	ED-02	GEM-412	4TM-S2	
C24	100		17-10115	1468-0001	D6-101	5W5T1	ED-100	MC235	1FM-31	
C25	5000		15-50217	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C26	.02	400	16-20343	P488N-02	DD-203	CUB4S2	ED-02	GEM-412	4TM-S2	
C27	50		17-50015	1468-00005	D6-500	5W5Q5	ED-50	MC225	1FM-45	
C28	100		17-10115	1468-0001	D6-101	5W5T1	ED-100	MC235	1FM-31	⑧
C29	.002	600	16-20253	P688N-002	D6-202	CUB6D2	GP-2000	GEM-622	6TM-D2	
C30	20000		15-20317	BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	
C31	20000		15-20317	BPD-02	DD-203	BYB6S2	ED-02		5HK-S2	
C32	.1	200	16-10423	P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C33	.1	200	16-10423	P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C34	5000		15-50217	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C35	.05	400	16-50343	P488N-05	DF-503	CUB4S5		GEM-415	4TM-S5	
C36	.05	400	16-50343	P488N-05	DF-503	CUB4S5		GEM-415	4TM-S5	
C37	.05	400	16-50343	P488N-05	DF-503	CUB4S5		GEM-415	4TM-S5	

① Part #20-23-0 used in Model 8224.
② Part #19-154-0 used in Model 8224.
③ Part #19-155-0 used in Model 8224.
④ Part #19-159-0 used in Model 8224.
⑤ Part #19-158-0 used in Model 8224.
⑥ Part #19-157-0 used in Model 8224.
⑦ Part #19-156-0 used in Model 8224.
⑧ Some versions may use 470MMF in this application (Part #17-47115).

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1Meg	½	24-223 ①	B-70-S	A47-1Meg-Z	Q13-137	U53	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWE-20	76-2	US-27	

① Part #24-223-0 used in Model 8224.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		SILVERTONE PART No.	NOTES
	OHMS	WATT		
R2	10Meg		60-10602	
R3	10Meg		60-10602	
R4	18K		60-18301	
R5	1800Ω		60-18201	
R6	4.7Meg		60-47502	
R7	4.7Meg		60-47502	
R8	47K		60-47302	
R9	220K		60-22401	
R10	4.7Meg		60-47502	
R11	1800Ω		60-18201	
R12	82Ω		60-82001	
R13	10Meg		60-10602	

ITEM No.	RATING		SILVERTONE PART No.	NOTES
	OHMS	WATT		
R14	1800Ω		60-18201	
R15	47K		60-47302	
R16	2.2Meg		60-22501	
R17	10Meg		60-10602	
R18	1Meg		60-10502	
R19	4.7Meg		60-47502	
R20	1Meg		60-10502	
R21	330Ω		60-33101	
R22A	80Ω	10	61-8	
B	2000Ω	10	61-8	
R23	1000Ω		60-10201	
R24	560Ω		60-56101	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	SILVERTONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	9300Ω	3-4Ω	80-324 ①	Z1117	A-2932	A-3879	24S52	S-17X	① Part #80-28-1 used in Model 8224.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SILVERTONE PART No.	QUAM PART No.	
SP1	5" x 7"	PM	3-4Ω	79-458 ①	57A1	① Part #33-315-4 used in Model 8224.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		SILVERTONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Stick	82-93 †			6300 ▲	Bands 1, 2
L1	Loop Stick	82-93-0 *				Bands 1, 2
L2	Ant. Coil	10-683 †				Band 1
L2	Ant. Coil	10-14-1 *				Band 1
L3A	Ant. Coil	10-686 †				Band 3
B	Ant. Coil					Band 4
L3A	Ant. Coil	10-16-1 *				Band 3
B	Ant. Coil					Band 4
L4A	Mixer Coil	10-684 †				Band 1
B	Mixer Coil					Band 2
L4A	Mixer Coil	10-15-1 *				Band 1
B	Mixer Coil					Band 2
L5A	Mixer Coil	10-687 †				Band 3
B	Mixer Coil					Band 4
L5A	Mixer Coil	10-17-1 *				Band 3
B	Mixer Coil					Band 4
L6A	Osc. Coil	10-685 †				Band 1
B	Osc. Coil					Band 2
L6A	Osc. Coil	10-8-4 *				Band 1
B	Osc. Coil					Band 2
L7A	Osc. Coil	10-688 †				Band 3
B	Osc. Coil					Band 4
L7A	Osc. Coil	10-9-4 *				Band 3
B	Osc. Coil					Band 4
L8	Input IF	10-508 †	16-6758	BC-352	12-C1	
L8	Input IF	10-42-2 *	16-6758	BC-352	12-C1	

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (cont)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		SILVERTONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L9	Output IF	10-508 †	16-6758	BC-353	12-C2	
L9	Output IF	10-42-2 *	16-6758	BC-353	12-C2	

† Part number used in Model 7224.
* Part number used in Model 8224.
▲ Drill mounting hole.

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	SILVERTONE PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.064A	83-568	1003A	RS075	75	

BATTERIES

ITEM No.	VOLTAGE	SILVERTONE PART No.	REPLACEMENT DATA				NOTES
			BURGESS "A-B" Pack	EVEREADY "A-B" Pack	MALLORY "A-B" Pack	RAY-O-VAC "A-B" Pack	
M2	9V "A" 90V "B"	6407 ①	F6A60	753	A-401	401	

① Part #57-6407 used in Model 8224.

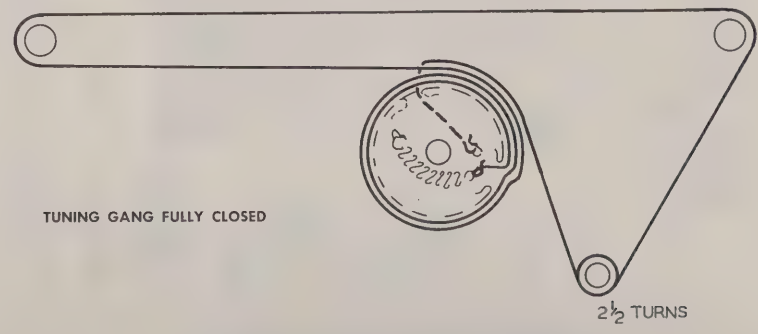
MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M3	Tuning Cap.	19-18-3	3 Gang (Ant. 12-465MMF, RF 12-465MMF, Osc. 12-465MMF)
	Tuning Cap.	19-243	3 Gang (Alternate)
M4	Switch	69-201	Band Selector (Rotary wafer type) Model 7224
	Switch	69-201-0	Band Selector (Rotary wafer type) Model 8224
M5	Switch	69-186	AC-Battery (Rotary wafer type)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	52-642	Band switch, Model 7224
Knob	52-642-0	Band switch, Model 8224
Knob	52-643	Tuning, Model 7224
Knob	52-643-0	Tuning, Model 8224
Knob	52-644	On-off-volume, Model 7224
Knob	52-644-0	On-off-volume, Model 8224
Cabinet	42-813	Brown leatherette, Model 7224
Cabinet	42-35-1	Grey and black leatherette, Model 8224
Antenna	82-103	Telescopic, Model 7224
Antenna	82-103-0	Telescopic, Model 8224



DIAL CORD STRINGING

PHOTOFACT* Folder

*TRADE MARK

SONIC
MODELS TR-600, TR-700

SONIC
MODELS TR-600, TR-700

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

SONIC
MODELS TR-600, TR-700

TRADE NAME	Sonic Models TR-600, TR-700
MANUFACTURER	Sonic Industries, Inc., 19 Wilbur St., Lynbrook, N.Y.
TYPE SET	Battery Operated Portable AM Transistorized Receiver
POWER SUPPLY	9 Volts DC
RATING	14 MA @ 9 Volts DC
TUNING RANGE—BROADCAST	540KC - 1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.		Loop	455KC (400∿ Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.		"	1620KC	"	"	A4	"
3.		"	1400KC	1400KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Repeat as necessary to insure proper tracking.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1957 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

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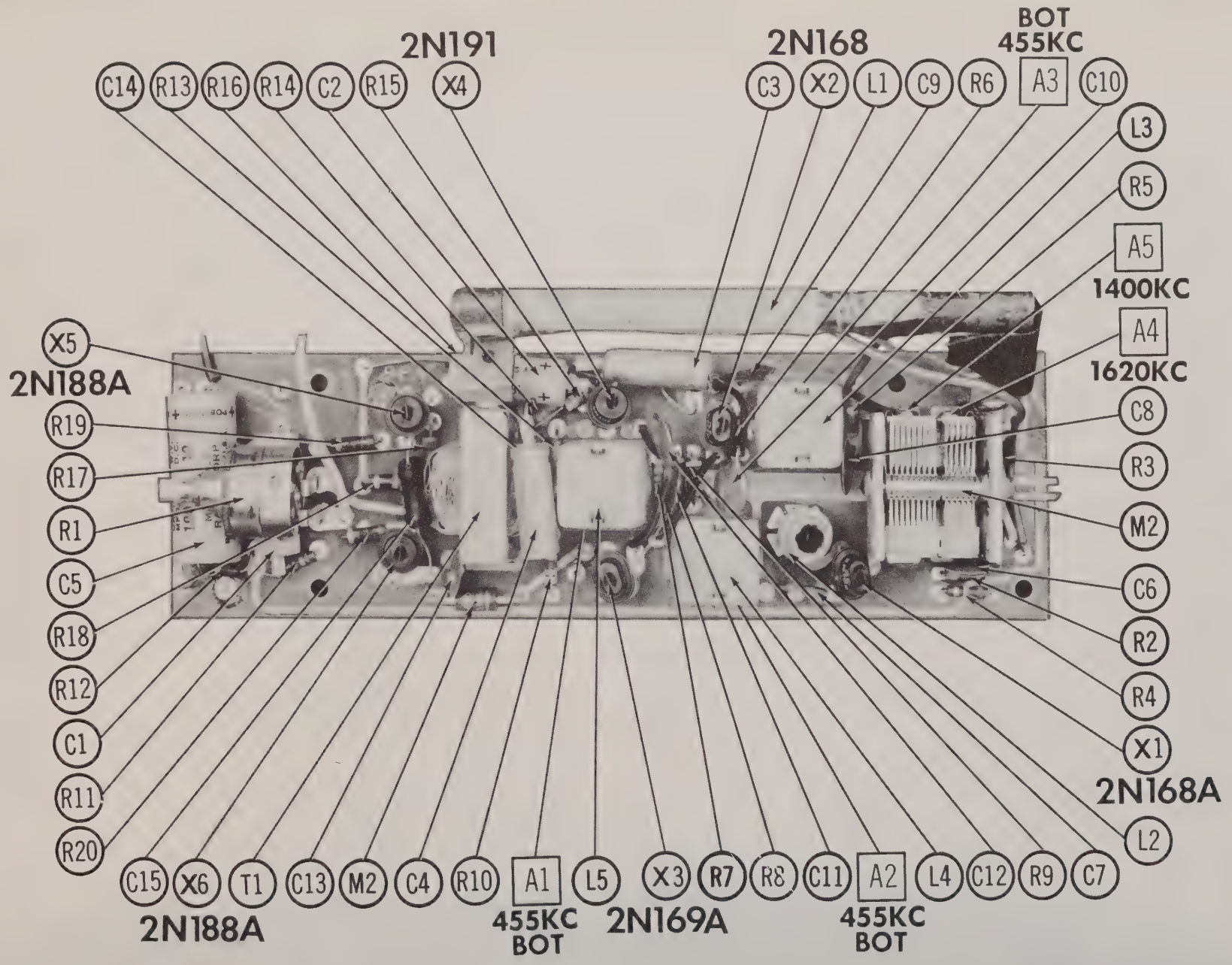
FOLDER 12



CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N168A	Converter	2N439			① Some versions use a 2N169. ② Some versions use a 2N190. ③ Some versions use a 2N187.
X2	2N168 ①	1st. IF Amplifier	2N439			
X3	2N169A①	2nd. IF Amplifier	2N439			
X4	2N191 ②	AF Amplifier	2N180	2N362		
X5	2N188A③	Output	2N181	2N360		
X6	2N188A③	Output	2N181	2N360		

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	SONIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	10	10		XPP10010	NL10-10	TT12X10	ML10-15	MMT-0210	TE-1114
C2	2	10		XPP10002	NL3-10	TT12X2	ML2-15	MT-0502	R2441 *
C3	40	6		XPP6040	NL40-6	TT6X40	ML40-6	MMT-650	TE-1095
C4	40	6		XPP6040	NL40-6	TT6X40	ML40-6	MMT-650	TE-1095
C5	100	10		PRS12V100	BBR100-15	TC2501	TD-100-15	MTH-1210	TVA-1130

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	SONIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C6	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C7	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C8	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C9	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C10	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C11	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C12	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C13	10000			BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	Note 1
C14	5000			BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C15	.05	200		P288N-05	DF-503	CUB2S5		GEM-415	2TM-S5	

Note 1. Some versions use 5000MMF in this application.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SONIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	5000Ω	½	TR-6-4					Volume and switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		SONIC PART No.	NOTES
	OHMS	WATT		
R2	1500Ω			Note 1
R3	27K			
R4	15K			
R5	470Ω			
R6	330Ω			
R7	3300Ω			
R8	82K			
R9	10K			
R10	470Ω			
R11	3300Ω			

ITEM No.	RATING		SONIC PART No.	NOTES
	OHMS	WATT		
R12	100K			
R13	33K			
R14	5600Ω			
R15	470Ω			
R16	330Ω			
R17	3000Ω			
R18	68Ω			
R19	10Ω			
R20	10Ω			

Note 1. Some versions may use 10K in this application.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	Turns Ratio		REPLACEMENT DATA						NOTES
	PRI.	SEC.	SONIC PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.5 :	1	TR-6-D						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	SONIC PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	208Ω CT	3-4Ω	TR-6-0						

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SONIC PART No.	QUAM PART No.	
SP1	5"	PM	3-4Ω		5A1R	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		SONIC PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Stick					
L2	Osc. Coil					
L3	1st. IF	TR-77-7				
L4	2nd. IF	TR-77-7				
L5	3rd. IF	TR-77-6				

BATTERIES

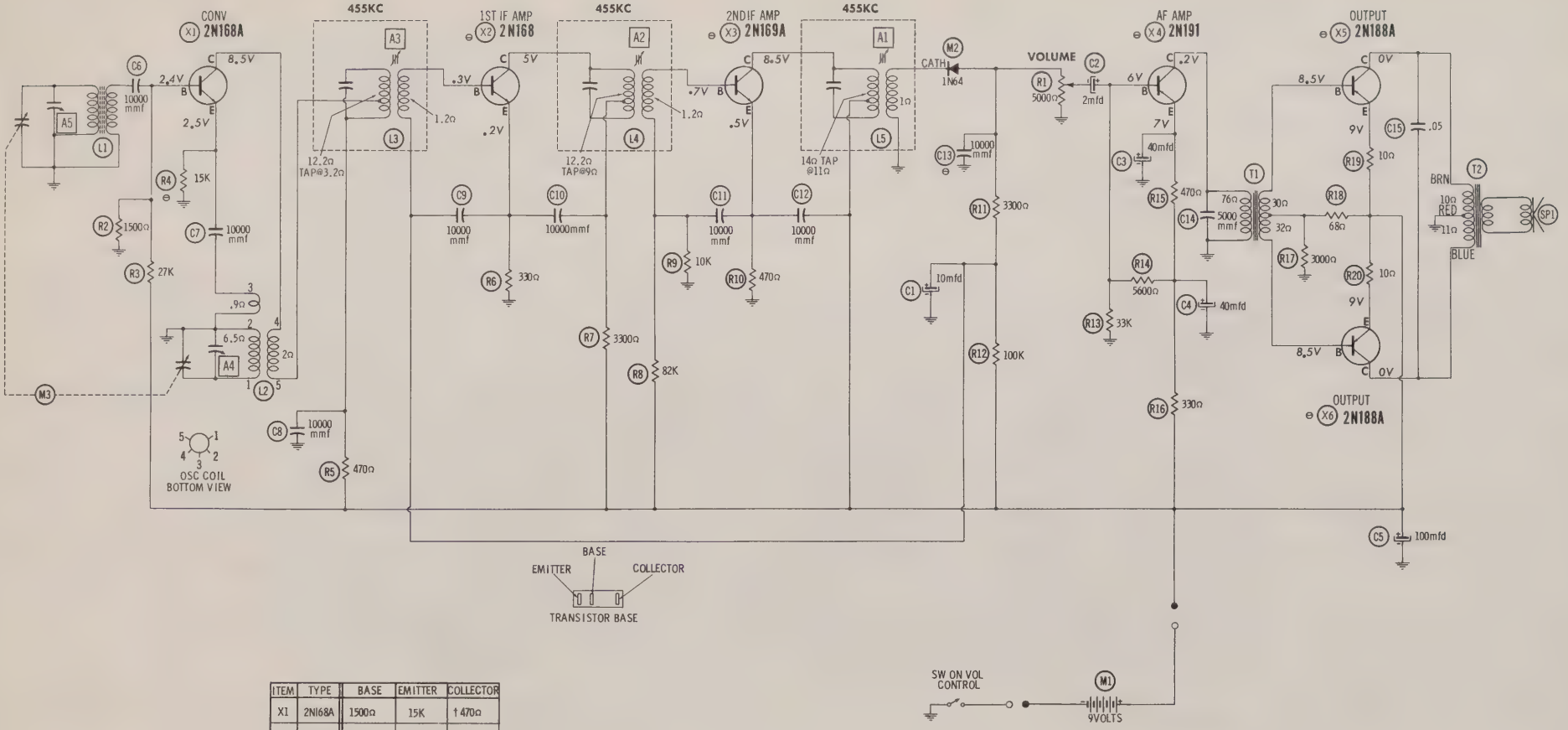
ITEM No.	VOLTAGE	SONIC PART No.	REPLACEMENT DATA								NOTES
			BURGESS		EVEREADY		MALLORY		RAY-O-VAC		
			"A"	"B"	"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V		P6		226		M1600		1600		

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		SONIC PART No.	CBS PART No.	SYLVANIA PART No.	
M2	1N64		1N64	1N60	AM Detector

MISCELLANEOUS

ITEM No.	PART NAME	SONIC PART No.	NOTES
M3	Tuning Cap.		2 Gang (Ant. 15-210MMF)



ITEM	TYPE	BASE	EMITTER	COLLECTOR
X1	2N168A	1500Ω	15K	†470Ω
X2	2N168	7700Ω	330Ω	†3300Ω
X3	2N169A	11K	470Ω	†3Ω
X4	2N191	10K	†820Ω	76Ω
X5	2N188A	†98Ω	†10Ω	10Ω
X6	2N188A	†100Ω	†10Ω	11Ω

TRANSISTORS REMOVED FOR RESISTANCE MEASUREMENTS.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum. no signal aplied for voltage measurements.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1957

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*TRADE MARK

TRUETONE MODEL D3789A

TRUETONE MODEL D3789A

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3924 MEADE ST.,
DENVER, COLORADO

TRUETONE MODEL D3789A

TRADE NAME	Truetone Model D3789A
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City, Mo.
TYPE SET	Three Power Portable AM Receiver
TUBES (Five)	Types 1U4 RF Amplifier, 1R5 Converter, 1U4 IF Amplifier, 1U5 Det.-AVC-AF Amp. 3V4 Output
POWER SUPPLY	110-120 Volts AC-DC (Or) 9 Volts "A" Supply & 90 Volts "B" Supply In Pack Form
RATING	.15 Amp. @ 117 Volts AC (Or) 60MA @ 9 Volts DC & 9MA @ 90 Volts DC
TUNING RANGE—BROADCAST	535-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use battery power, if possible. If AC power is used, use an isolation transformer when available. If not, connect a .1MFD capacitor in series with low side of the signal generator and B-.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 6 (grid) of 1R5 (V2). Low side to B-.	455KC (400~ Mod.)	1000KC	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output. IF AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation.
2.	"	"	1600KC	1600KC	"	A5	"
3.		Loop	1400KC	1400KC	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.		"	600KC	600KC	"	A7	"

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1957 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	1U4	
V2	Converter	1R5	
V3	IF Amplifier	1U4	

ITEM No.	USE	TYPE	NOTES
V4	Det.-AVC-AF Amplifier	1U5	
V5	Output	3V4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	TRUETONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■40	150	150-120						R2421*
B	▲200	50							
C	50	50							
D	▲40	150							

* Non-Catalog Item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.05	200	152-104	BPD-05	DF-503	CUB2S5		GEM-415	2TM-S5	
C3	.05	200	152-104	BPD-05	DF-503	CUB2S5		GEM-415	2TM-S5	
C4	.1	400		P488N-1	DF-104	CUB4P1		GEM-401	4TM-P1	
C5	10000		158-102	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C6	5000		158-101	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C7	2000		158-103	BPD-002	DD-202	BYA10D2	ED-002	UC-522	5GA-D2	
C8	2000		158-103	BPD-002	DD-202	BYA10D2	ED-002	UC-522	5GA-D2	
C9	.1	200	152-122	P288N-1	DF-104	CUB2P1		GEM-201	2TM-P1	
C10	.047	400	152-111	BPD-05	DF-503	CUB4S47		GEM-4147	4TM-S47	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	TRUETONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1Meg	½	120-121	B-70	A47-1Meg-Z	Q13-137	U53	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KB-2	SWE-20	76-2	US-27	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		TRUETONE PART No.	NOTES
	OHMS	WATT		
R2	4.7Meg		180-122	
R3	100K		180-116	
R4	15K		180-115	
R5	4.7Meg		180-122	
R6	220K		180-105	
R7	2.2Meg		180-107	
R8	6.8Meg		180-135	

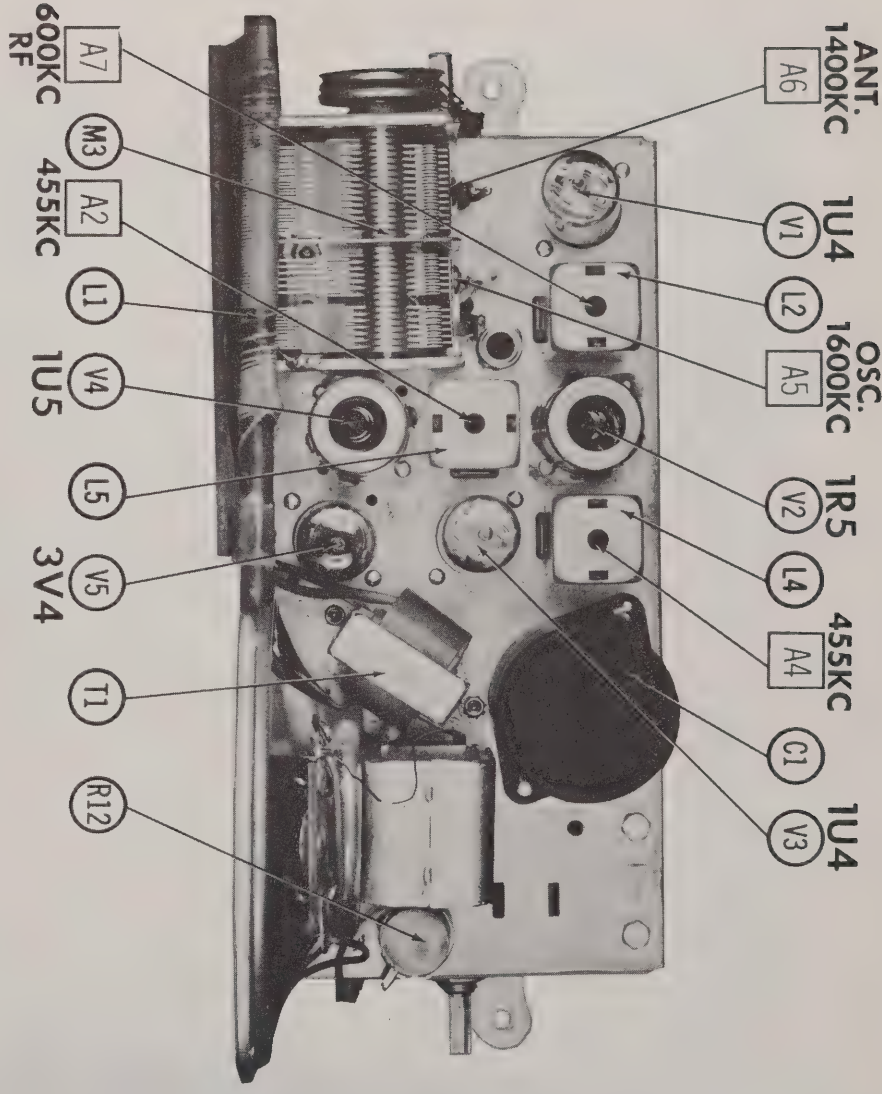
ITEM No.	RATING		TRUETONE PART No.	NOTES
	OHMS	WATT		
R9	680Ω		180-140	Note 1
R10	680Ω		180-140	Note 2
R11	1000Ω 5%		180-142	
R12	2250Ω 5%	10	270-103	
R13	2700Ω 5%	1	180-139	
R14	56Ω	2	180-181	

Note 1. Manufacturer recommends 5% replacements.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	11K	3-4Ω	138-111					S-11Z	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	TRUETONE PART No.	QUAM PART No.	
SP1	5"	PM	3-4Ω	175-121	5A07	Alternate Part #175-120A

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA				NOTES
		TRUETONE PART No.	MEISSNER PART No.	MERIT PART No.	MILLER PART No.	
L1	Loop Stick	132-118A		BC-419		
L2	RF Trans.	130-113				
L3	Osc. Coil	136-120	14-1073	BC-401	69-OSC	
L4	Input IF	130-111	16-6758	BC-352	12-C1	
L5	Output IF	130-111	16-6758	BC-353	12-C2	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	TRUETONE PART No.	REPLACEMENT DATA	
K1	Det. RF Filter	100MMF, 100MMF, 47K	166-107	Aerovox Centralab Cornell-Dubilier Erie Sprague	PA-97-1 PC-50 111TM1 1403-01 D-1
K2	Audio Coup. Net.	5000MMF, 5000MMF, 100MMF, 4.7Meg, 2.2Meg, 1Meg	166-110	Aerovox Centralab Cornell-Dubilier Erie Sprague	PA-117 PC-91 114TM2 1407-03 P-2

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	TRUETONE PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.060A	265-103	1003A	RS075	75	

BATTERIES

ITEM No.	VOLTAGE	TRUETONE PART No.	REPLACEMENT DATA				NOTES
			BURGESS "A-B" Pack	EVEREADY "A-B" Pack	MALLORY "A-B" Pack	RAY-O-VAC "A-B" Pack	
M2	90V "B" 9V "A"	3B6466	T6Z60	756	M-405	405	

MISCELLANEOUS

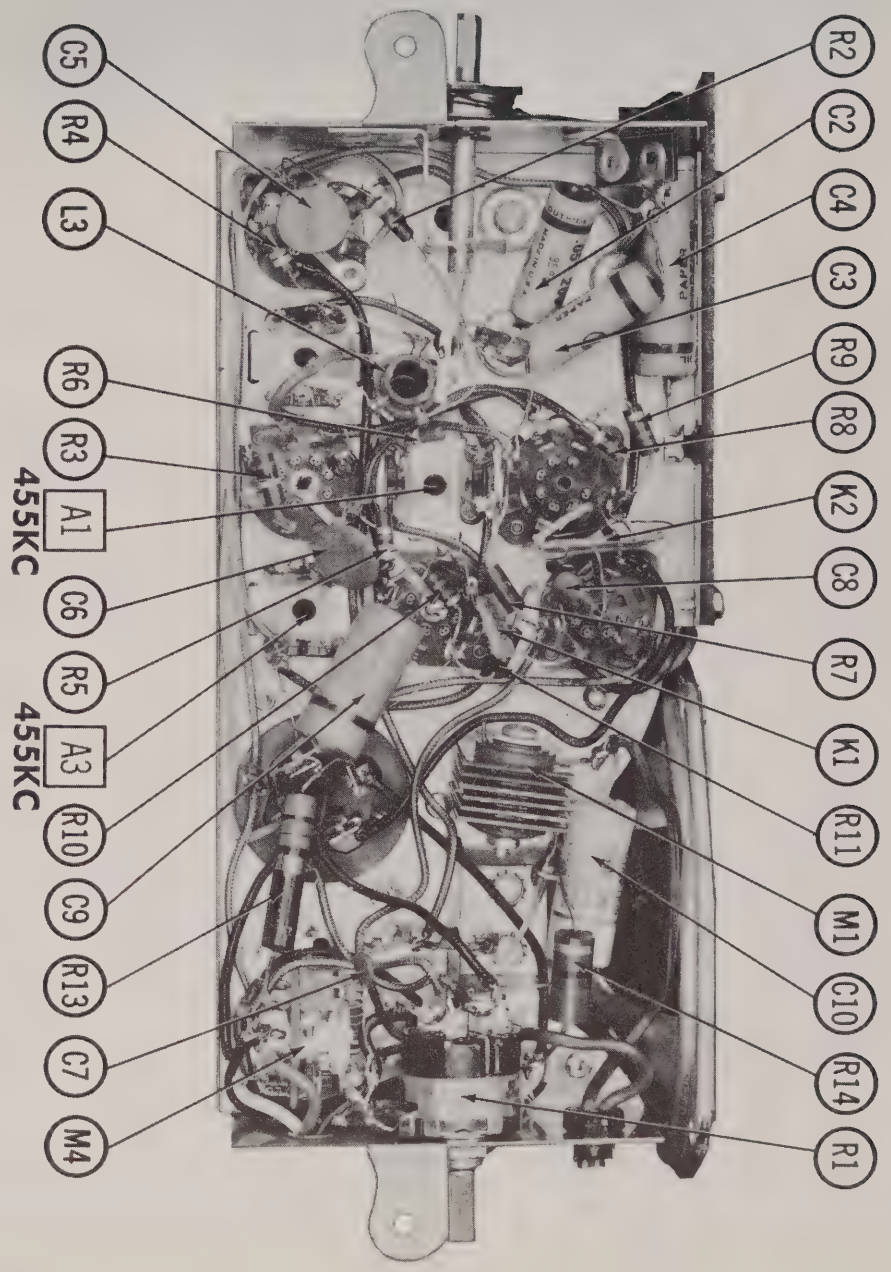
ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M3	Tuning Cap.	160-113	3 gang (Ant. 25-490MMF, RF 10-200MMF, Osc. 18-125MMF)
M4	Switch	125-107	Power Changeover

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	220-144	Tuning
Knob	220-143	On-Off-Volume
Cabinet	210-127	
Cover	110-227	Chassis Bottom

CHASSIS—BOTTOM VIEW

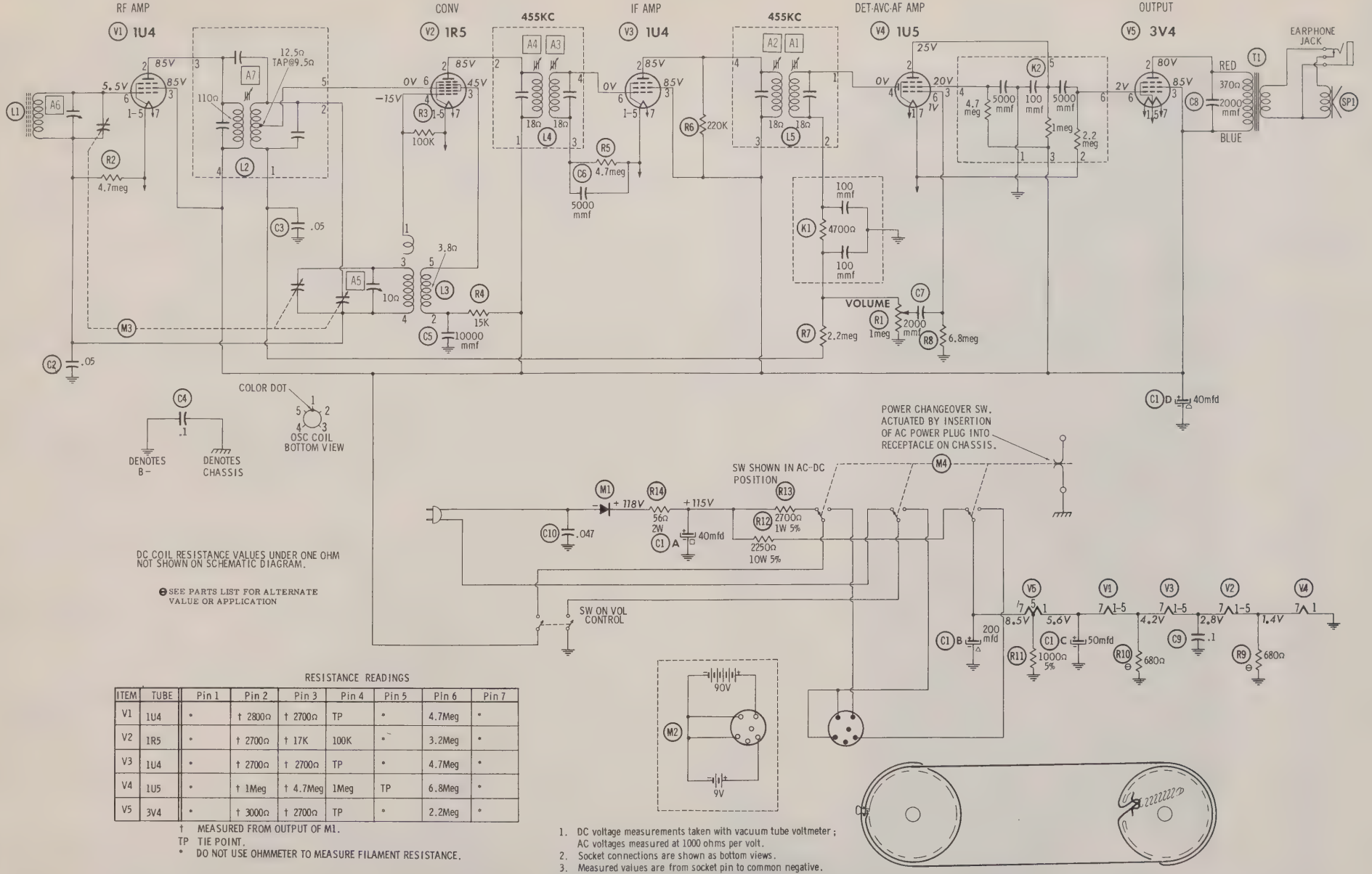


SET 382 FOLDER 13

FOLDER 13

TRUETONE MODEL D3789A

TRUETONE MODEL D3789A



DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	1U4	*	† 2800Ω	† 2700Ω	TP	*	4.7Meg	*
V2	1R5	*	† 2700Ω	† 17K	100K	*	3.2Meg	*
V3	1U4	*	† 2700Ω	† 2700Ω	TP	*	4.7Meg	*
V4	1U5	*	† 1Meg	† 4.7Meg	1Meg	TP	6.8Meg	*
V5	3V4	*	† 3000Ω	† 2700Ω	TP	*	2.2Meg	*

† MEASURED FROM OUTPUT OF M1.
TP TIE POINT.
* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum. no signal applied for voltage measurements.

DIAL CORD STRINGING

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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*TRADE MARK

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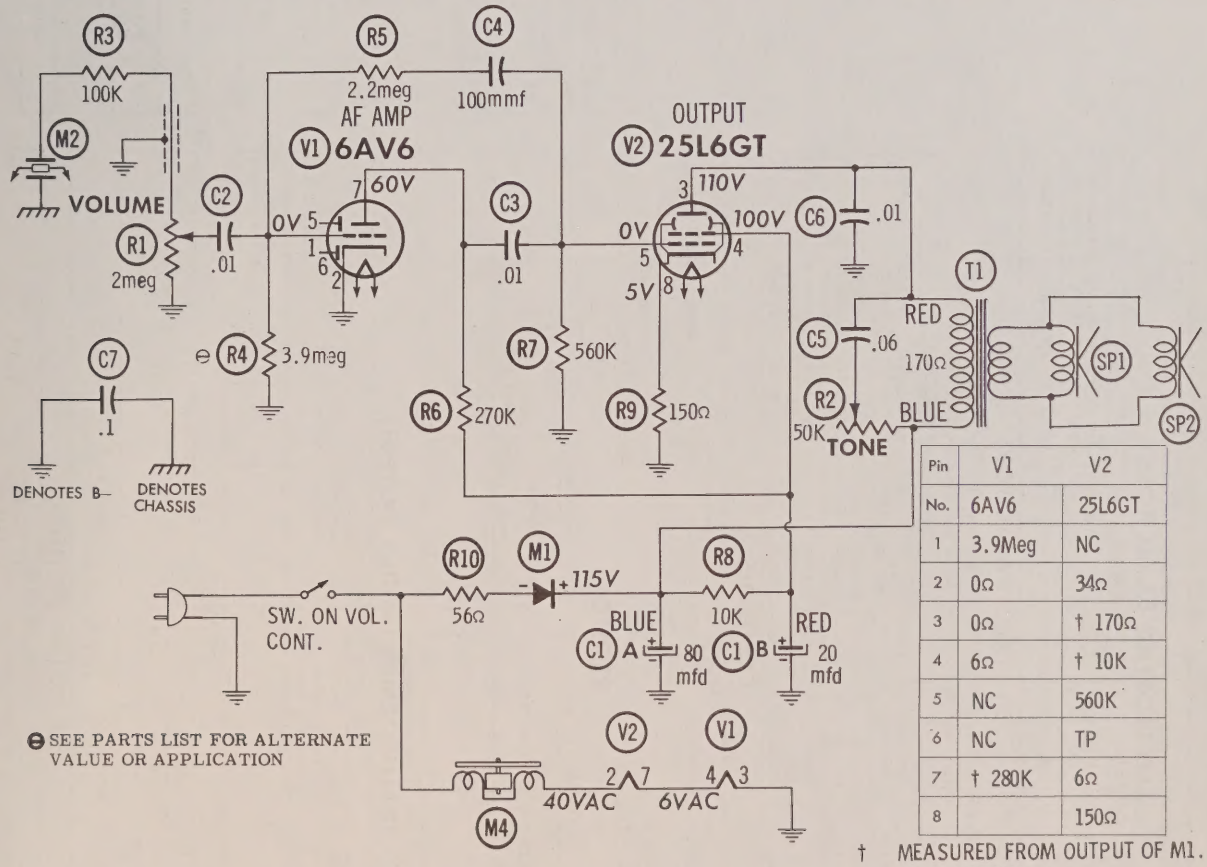
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

ZENITH
MODEL ZP7L

TRADE NAME	Zenith Model ZP7L
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Ill.
TYPE SET	AC Operated Phono Amplifier With 3 Speed Manual Record Player
TUBES (Two)	Types 6AV6 AF Amplifier, 25L6GT Output
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING .4 Amp. @ 117 Volts AC (42 Watts)



Pin No.	V1 6AV6	V2 25L6GT
1	3.9Meg	NC
2	0Ω	34Ω
3	0Ω	† 170Ω
4	6Ω	† 10K
5	NC	560K
6	NC	TP
7	† 280K	6Ω
8		150Ω

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

† MEASURED FROM OUTPUT OF M1.
NC NO CONNECTION.
TP TIE POINT.

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PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amplifier	6AV6	

ITEM No.	USE	TYPE	NOTES
V2	Output	25L6GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	80	150	WC12018	PRS150V8020	BBRT53215	TCT3116	TDLD-10	FMT-315	TVA-2460
B	20	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.01	200	22-1843	BPD-01	DD-103	CUB2S1	GP-10000	GEM-411	2TM-S1	
C3	.01	200	22-1843	BPD-01	DD-103	CUB2S1	GP-10000	GEM-411	2TM-S1	
C4	100		22-2234	BPD-0001	DD-101	L10T1	ED-100	UC-531	5GA-T1	
C5	.06	200	22-1744	P288N-06		CUB6S6		GEM-416	6TM-S6	
C6	.01	200	22-1843	BPD-01	DD-103	CUB2S1	GP-10000	GEM-411	4TM-S1	
C7	.1	200	22-2780	P288N-1	DF-104	CUB2P1		GEM-401	2TM-P1	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ZENITH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	2Meg	1/2	WC11748				TA26A	Volume & Switch
R2	50K	1/2	WC11749				TA54A	Tone

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		ZENITH PART No.	NOTES
	OHMS	WATT		
R3	100K			
R4	3.9Meg			Note 1
R5	2.2Meg			
R6	270K			

ITEM No.	RATING		ZENITH PART No.	NOTES
	OHMS	WATT		
R7	560K			
R8	10K			
R9	150Ω			
R10	56Ω			

Note 1. Some versions may use 5.6Meg in this application.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	ZENITH PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2700Ω	1.7Ω	WC11876 ①	Z1001 ②③	A-3026	A-3877 ②	24S51 ②	S-3X ②	① Alternate Part #95-1404. ② Drill new mounting hole. ③ Tape center tap on primary winding.

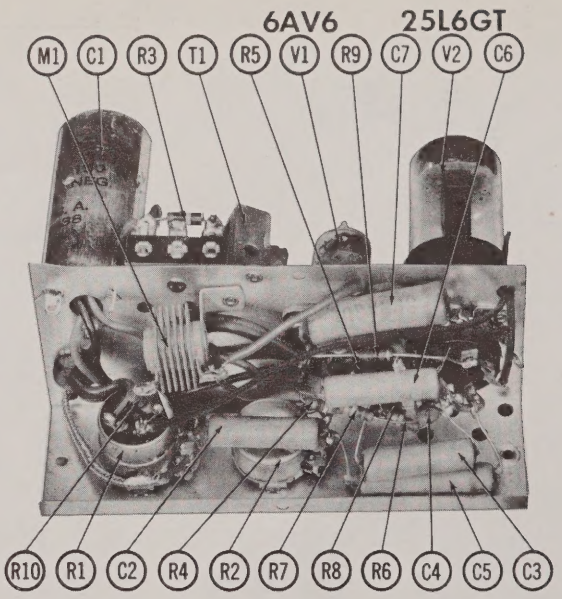
SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ZENITH PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	WC11792①②	4A07 ②	① Alternate Part #49-750
SP2	4"	PM	3-4Ω	WC11792①②	4A07 ②	② Parallel and Phase

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	ZENITH PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.042A	WC11756	1386	RS065Q	65	

CHASSIS—BOTTOM VIEW



PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	ZENITH PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	MOUNT	
M2	† 142-85	312-TS * P-312-T	N8-1 or N8-3	56 * 2756	PT-1	* Tone arm complete with cartridge. † Includes needles.

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	ZENITH PART No.	JENSEN PART No.	WALCO PART No.	
M3	56-371 (33 1/3-45RPM)	† CRA-55LP or ♦ CRA-55LPD	† W-64MGS	† Jewel ♦ Diamond
	56-372 (78RPM)	† CRA-55 or ♦ CRA-55D	† W-64S	

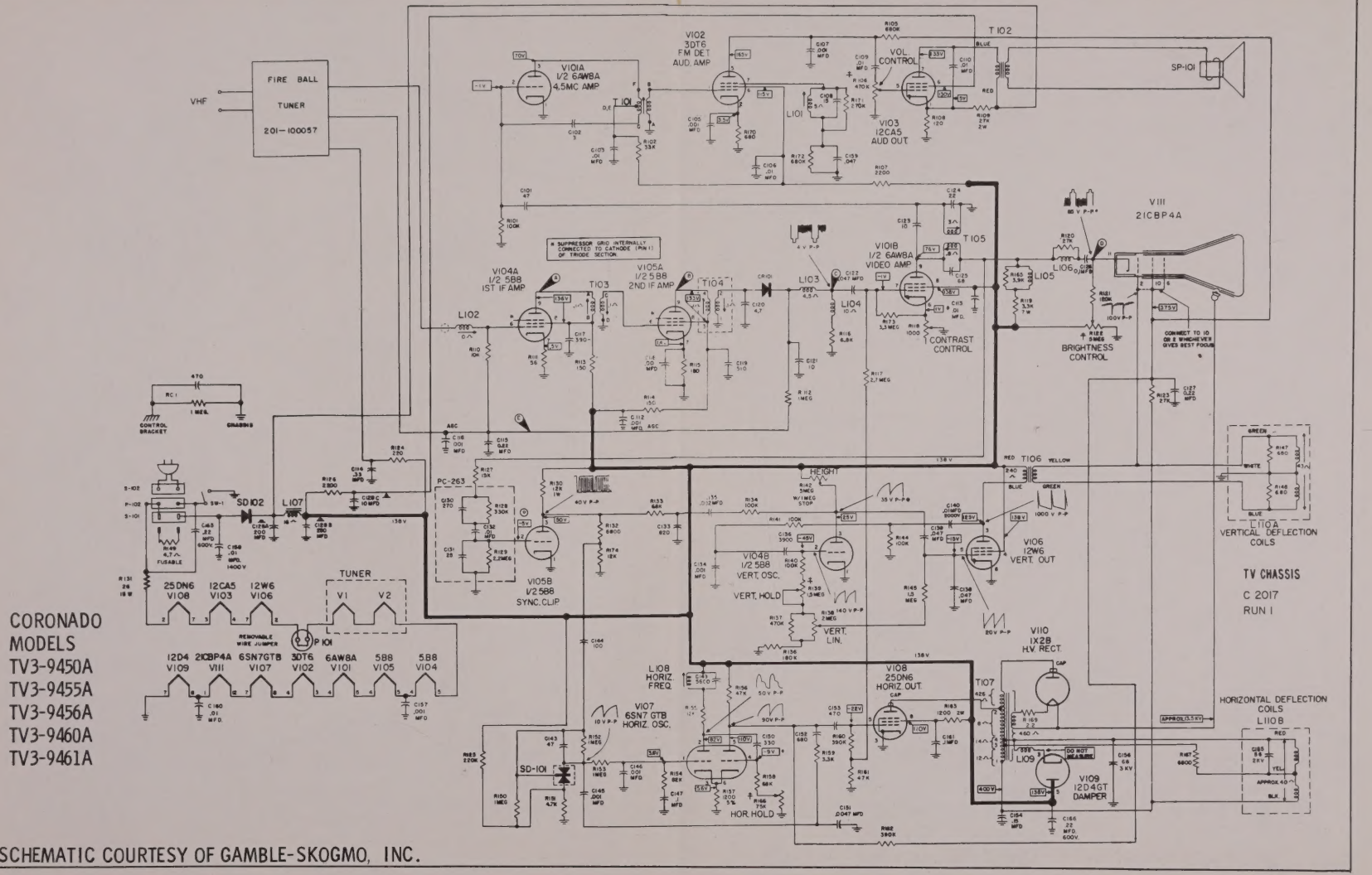
MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M4	Motor	141-151	(Alliance)
	Motor	141-152	(General Instrument)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Handle	WC12324	
Grille	WC12331	
Knob	WC12126-3E	
Case	WC12338	



SCHEMATIC COURTESY OF GAMBLE-SKOGMO, INC.

RCA MODELS	CHASSIS
21D8281, U	KCS116A B
21D8282, U	"
21D8305, U	"
21D8306, U	"
21D8307, U	"
21D8628, U	KCS116C, D

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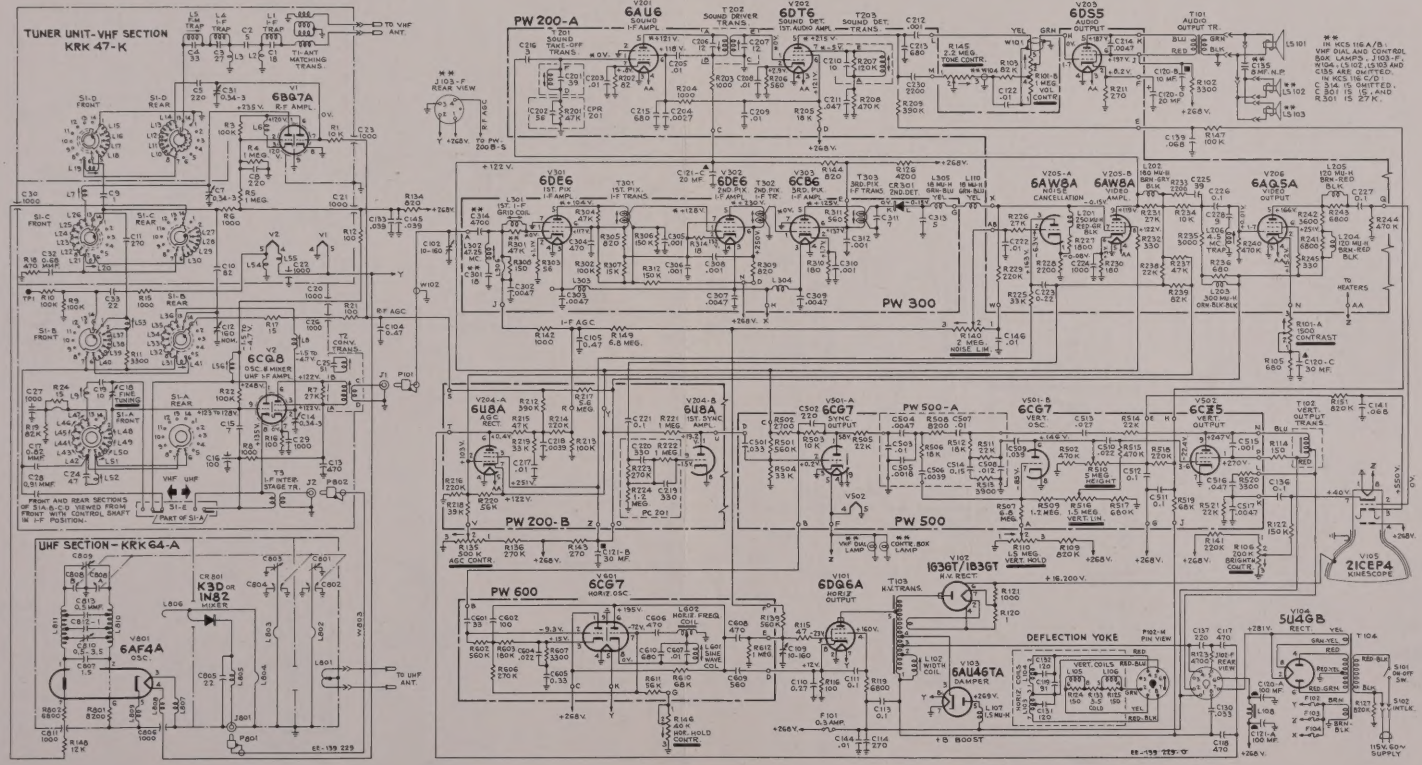

SCHEMATIC COURTESY OF RADIO CORPORATION OF AMERICA

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